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August 1992

Methylbromide and Its Alternatives as Fumigants, 1979 - May 1992

Citations from AGRICOLA
Concerning Diseases and Other
Environmental Considerations



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**Citations from AGRICOLA
Concerning Diseases and Other
Environmental Considerations**

Compiled and Edited by
Charles N. Bebee
National Agricultural Library

United States Department of Agriculture
Beltsville, Maryland 20705

and

United States Environmental Protection Agency
Office of Pesticide Programs
Washington, D.C. 20460

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FOREWORD

This is the 47th volume in a series of commodity-oriented environmental bibliographies resulting from a memorandum of understanding between the U.S. Department of Agriculture, National Agricultural Library (USDA-NAL), and the U.S. Environmental Protection Agency, Office of Pesticide Programs (EPA-OPP).

This close working relationship between the two agencies will produce a series of bibliographies which will be useful to EPA in the regulation of pesticides, as well as to any researcher in the field of plant or commodity protection. The broad scope of information contained in this series will benefit USDA, EPA, and the agricultural community as a whole.

The sources referenced in these bibliographies include the majority of the latest available information from U.S. publications involving commodity protection throughout the growing and processing stages for each agricultural commodity.

We welcome the opportunity to join this cooperative effort between USDA and EPA in support of the national agricultural community.

JOSEPH H. HOWARD, Director
National Agricultural Library

DOUGLAS D. CAMPT, Director
Office of Pesticide Programs

INTRODUCTION

The citations in this bibliography, Methylbromide and Its Alternatives as Fumigants, 1979 - May 1992, are selected from the AGRICOLA database and cover diseases, insects, nematodes, weeds, chemicals, and other environmental considerations.

This is the 47th volume in a series of commodity-oriented listings of citations from AGRICOLA jointly sponsored by the U.S. Department of Agriculture, National Agricultural Library (USDA-NAL), and the U.S. Environmental Protection Agency, Office of Pesticide Programs (EPA-OPP). During the past year, subjects in this series included The Protection of Stored Grains; The Protection of Nut Crops; The Protection of Peanuts; The Protection of Tomatoes, Egg Plants, and Peppers; and The Protection of Lawn and Turf Grasses. Other titles to be issued during the current year are The Protection of Corn, The Protection of Pome Fruits, and Biotechnology in Agriculture.

Entries in the bibliography are subdivided into a series of section headings used in the contents of the Bibliography of Agriculture. Each item appears under every section heading assigned to the cited document. A personal author index accompanies this publication. Subject and site indices may be obtained after January 1993 by writing to the address below.

The U.S. Environmental Protection Agency contact for this project is Richard B. Peacock, Office of Pesticides and Toxic Substances.

Any comments or questions concerning this bibliography may be addressed to:

Reference and User
Services Branch
USDA-NAL, Room 1402
Beltsville, MD 20705
(301) 504-6875

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Scholtes, J.R. Fort Collins, Colo. : The
Station. General technical report RM - Rocky
Mountain Forest and Range Experiment Station,
U.S. Department of Agriculture, Forest Service.
Paper presented at the Intermountain Forest
Nursery Association Meeting, August 14-18,
1989, Bismark, North Dakota. Dec 1989. (184).
p. 35-37. (NAL Call No.: DNAL aSD11.A42).

EDUCATION AND TRAINING NOT EXTENSION

0002

**Nevada pesticide applicator training
certification workbook /H.G. Smith ... et
al. .**

Smith, H. G. Reno, Nev.? : Nevada Cooperative
Extension, University of Nevada, 1987 .

Abstract: Designed to assist individuals
preparing for pesticide certification
examinations, this workbook developed in Nevada
includes general information on federal and
state pesticide laws and regulations; pesticide
types, labels, formulations, toxicity, and
safety, protective clothing and equipment; what
to do in pesticide poisoning cases; and
equipment selection and calibration. Plant
diseases, insects, weeds, vertebrate pests,
groundwater contamination, chemigation, and
safe and effective applicator practices are
discussed. Contains color coded information
relevant to the following categories:
agricultural plant and animal, forest, and
ornamental and turf pest control, seed
treatment, aquatic, right-of-way, industrial,
public health, fumigation, mosquito, and
predator pest control and wood preservatives.
General information material must be
supplemented by reading the Applying Pesticides
Correctly handbook. Cover title.~ "December
1987.". 136 p. : ill. ; 28 cm. (NAL Call No.:
DNAL S87.S7 no.87-7 1987).

ADMINISTRATION

0003

United States Environmental Protection Agency
label improvement program for fumigants.
Fresvik, M.K. Milwaukee, Wis.? : The
Association?, 1985? . Proceedings, Barley
Insect Conference : January 9, 1985,
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Association. p. 39-44. (NAL Call No.: DNAL
SB608.B2B2 1985).

LEGISLATION

0004

Banning soil fumigants: what cost?.

Barse, J.R. Ferguson, W.L. Rockville, Md. : The Service. Agricultural outlook AD - U.S. Department of Agriculture, Economic Research Service. June 1989. (153). p. 32-34. (NAL Call No.: DNAL aHD1751.A42).

0005

Citrus fumigation: the California rules will be different (Ethylene dibromide, Medfly).

Los Angeles, California Citrograph Publishing Co. Citrograph. Mar 1981. v. 66 (5). p. 101-102, 110. (NAL Call No.: 80 C125).

0006

The costs of a ban on soil fumigants.

Harrison, J. Washington, D.C. : The Service. Farmline - U.S. Department of Agriculture, Economic Research Service. July 1989. v. 10 (7). p. 9. (NAL Call No.: DNAL aHD1401.A2U52).

0007

EDB (ethylene dibromide) update (Use for post-harvest fumigation of papayas, Rebuttable Presumption Against Registration, Hawaii). Fujiyama, S. Honolulu : The Institute. Research extension series - Hawaii Institute of Tropical Agriculture and Human Resources. Oct 1982. Presented at the 17th Annual Hawaii Papaya Industry Association Conference, September, 1981. Oct 1982. (O20). p. 47-50. (NAL Call No.: S481.R4).

0008

EPA regulation for grain fumigation.

Criswell, J.T. Stillwater, Dkla. : The Service. Circular E - Dklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 31-52. ill. (NAL Call No.: DNAL 275.29 OK41C).

0009

Handling a fumigant waste.

JPCAAC. Morse, H.N. Pittsburgh, Pa. : Air Pollution Control Association. JAPCA. Sept 1988. v. 38 (9). p. 1239. Includes references. (NAL Call No.: DNAL 449.9 AI7).

0010

In-transit shipboard fumigation of grain: research to regulation.

CFWDD. Davis, R. Barrett, R.H. St. Paul, Minn. : American Association of Cereal Chemists. Abstract: The results of a cooperative research program involving USDA, national governments, and international agri-businesses for in-transit shipboard liquid fumigation of grain have been translated into regulations that ensure the safety and efficacy of the fumigation. The research program is described and fumigation implementation and emergency and aeration procedures are discussed. Research is continuing, to improve the current technology and to establish methodology to extend in-transit shipboard fumigation to other types of ships and commodities. Bioassay to assess the effectiveness of the fumigation also are discussed. (wz). Cereal foods world. Mar 1986. v. 31 (3). p. 227-229. ill. Includes 11 references. (NAL Call No.: DNAL 59.8 C333).

0011

The law and regulations on licensing pest control operators a handbook for commercial pest control operators /issued January 15, 1984 by the State Plant Board ... Commercial Pest Control Section.

Arkansas.~State Plant Board. Little Rock, Ark. : The Board, 1984. Abstract: The Arkansas Pest Control Law and the regulations of the State Plant Board for licensing pesticide control applicators are the contents of this handbook. The 1985 regulation changes are attached separately. Caption title. 27 p. : ill. ; 22 cm. (NAL Call No.: DNAL KFA3882.I5A3 1984).

0012

OSHA requirements in commercial grain storage fumigation.

Noyes, R.T. Stillwater, Dkla. : The Service. Circular E - Dklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 60-75. (NAL Call No.: DNAL 275.29 DK41C).

0013

Pesticide applicator training update /Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

Gainesville : The Service, 1987. Abstract: This booklet for certified pesticide applicators contains important updated information on applying pesticides correctly. Topics covered are: Florida pesticide law and rules, disposal of pesticide waste containers, handling pesticide spills, ground water advisory statement on pesticide labels, endangered species pesticide label restrictions, and laundering the pesticide applicators's clothing. Includes 4 detachable safety posters:

Pesticide Spill Clean-up Instructions, Triple Rinse, Rubber Glove Zone and Pesticide Applicator's Phone List. Cover title.~ The plates are designed to be torn out and used as posters.~ "SP 34.". 11 p., 8 p. of plates : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.F6P4).

0014

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label improvement program for fumigants.**
Fresvik, M.K. Milwaukee, Wis.? : The Association?, 1985? . Proceedings, Barley Insect Conference : January 9, 1985, Minneapolis Plaza Hotel, Minneapolis, Minnesota / sponsored by American Malting Barley Association. p. 39-44. (NAL Call No.: DNAL SB608.B2B2 1985).

ECONOMICS

0015

The Biologic and economic assessment of registered fumigants.

Washington, D.C.? : U.S. Dept. of Agriculture, 1986? . "This report is a joint project of the U.S. Department of Agriculture, and State Land-Grant Universities."--Pref. 1 v. (various pagings) ; 28 cm. Includes bibliographies. (NAL Call No.: DNAL aSB951.B5).

0016

Economic effects of banning soil Fumigants /Joseph R. Barse, Walter Ferguson, Robert Seem.
Barse, Joseph R. Ferguson, Walter.; Seem, Robert. Washington, D.C. : United States Dept. of Agriculture, Economic Research Service, 1988 . Cover title.~ "December 1988"--P i. iv, 33 p. : ill. ; 28 cm. Includes bibliographical references (p. 26-27). (NAL Call No.: DNAL A281.9 Ag8A no.602).

ECONOMICS OF AGRIC. PRODUCTION

0017

Net economic values of eight soil management practices used in stake tomato production.

J0SHB. Estes, E.A. Skroch, W.A.; Konsler, T.R.; Shoemaker, P.B.; Sorensen, K.A. Alexandria, Va. : The Society. Journal of the American Society for Horticultural Science. Nov 1985. v. 110 (6). p. 812-816. Includes 9 references. (NAL Call No.: DNAL 81 S012).

FARM ORGANIZATION AND MANAGEMENT

0018

Cost-effectiveness of nematode control by fumigation SMDC on JRockdale soils.

McSorley, R. Pohronezny, K. S.I. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1984. v. 43. p. 188-192. Includes 20 references. (NAL Call No.: DNAL 56.9 S032).

0019

An economic analysis of producers' decisions regarding insect control in stored grain.

Anderson, K. Schurle, B.; Reed, C.; Pedersen, J. Columbus, Ohio : Ohio State University. The quantity of grain in storage has been exceptionally high through much of the early 1980s. As a result, the effect of insect activity on quality of grain that is stored for long periods of time has become a major concern. The purpose of this study was to analyze producer choices regarding treatments for control of insects in stored grain. A second degree stochastic dominance criterion was used to compare three treatments. In more than 80% of the comparisons, a protectant (malathion) was in the efficient set, which means that it could be selected by a risk-averse individual. In over 65% of the comparisons, a minimum treatment was in the efficient set. Treatment by fumigating was selected to remain in the efficient set in only 34% of the comparisons. Data from this study (before the implementation of the May 1988 regulations of the Federal Grain Inspection Service regarding insect infestation and insect-damaged kernels) suggest that elevator discounts were not consistent nor large enough to encourage farmers to incur large costs for controlling insects. North Central journal of agricultural economics. Jan 1990. v. 12 (1). p. 23-29. Includes references. (NAL Call No.: DNAL HD1773.A3N6).

0020

Economic impact of registration of ethylene dibromide (EDB) for use on soybeans.

Schmidt, K.M. Swanson, E.R. Urbana, Ill., The Department. Extract: Estimates of the economic impact of federal registration of EDB for use as a nematicide on soybeans were developed for two scenarios. Scenario I assumes that EDB is limited to soybean acreage presently treated with other fumigant nematicides. This limit was removed in Scenario II to allow EDB to be substituted for both fumigants and systemic nematicides. The total welfare impact in terms of changes in producers' rents plus consumers' surplus was estimated with a simulation model (AGSIM). These impacts were measured by the present value of an infinite series of future changes resulting from the registration of EDB. Estimated present value of the total welfare gains from the Section 24(c) exemptions is about 700 million dollars with approximately an additional one percent gain from a nation-wide registration. Illinois agricultural economics staff paper, series E agricultural economics -

Dept. of Agricultural Economics, University of Illinois. Apr 1981. Apr 1981. (82 E-218). 87 p. Bibliography p. 69-87. (NAL Call No.: 916937(AGE)).

0021

The influence of soil fumigation on strawberry yield and economics in black root rot infested fields.

AAREEZ. Wolfe, D. Hartman, J.R.; Brown, G.R.; Strang, J. New York, N.Y. : Springer. This study was designed to determine if the cost of soil fumigation would be recovered in the first year of production when yield potential was being limited by the strawberry root rot complex. Yield, stand counts, leaf mineral nutrient levels, and nematode population levels, were evaluated for each of three treatments consisting of 67% methyl bromide plus 33% chloropicrin (MC33), 98% methyl bromide plus 2% chloropicrin (MC2) and a nonfumigated control. Yield was significantly greater in the fumigated plots than the control plots but did not differ significantly between the two fumigants. Stand counts and leaf mineral nutrient levels were not found to vary significantly among treatments. Compared with the control, fewer plant parasitic nematodes were observed in plots treated with either MC33 or MC2. Nematode population differences between the MC33 and MC2 treatments were not evident. The cause of the black root rot complex was not determined from this study. Soil fumigation with either fumigant increased yields enough to justify this practice economically. Applied agricultural research. Winter 1990. v. 5 (1). p. 17-20. Includes references. (NAL Call No.: DNAL S539.5.A77).

DISTRIBUTION AND MARKETING

0022

Evaluation of a methyl bromide quarantine treatment to control codling moth (Lepidoptera: Tortricidae) on nectarine cultivars proposed for export to Japan.

JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. Lanham, Md. : Entomological Society of America. Our experiments showed that testing required by regulatory agencies to demonstrate the efficacy of a quarantine treatment using 48 g/m³ methyl bromide for 2 h at 21 degrees C or above and 50% load was unnecessary to control codling moth, *Cydia pomonella* (L.), on every nectarine cultivar proposed for export to Japan. Ovipositional tests for codling moth on nine nectarine cultivars showed no differences in acceptability among cultivars that might cause higher populations in harvested fruit and affect quarantine security levels. Measurements of egg chorion and fruit cuticle showed that codling moth eggs were not affected by different nectarine cultivars and other fruit substrates. No differences that would reduce the efficacy of the methyl bromide quarantine treatment were found in codling moth mortality to methyl bromide fumigation in dose-response tests on different substrates, including nectarine, peach, plum, and apple cultivars and waxed paper. A confirmatory test resulted in 100% mortality of 27,174 1-d-old codling moth eggs. The true survival proportion based on all confirmatory tests was less than or equal to 20 per 1 million at the 95% CL. A concentration X time product of (average +/- SD) 68.0 +/- 3.0 g.h/m³ methyl bromide was considered a useful measurement to help maintain treatment security for control of codling moth on all nectarine cultivars. Journal of economic entomology. Apr 1990. v. 83 (2). p. 466-471. Includes references. (NAL Call No.: DNAL 421 J822).

0023

Gamma radiation as a quarantine treatment for Fuller rose beetle eggs (Coleoptera: Curculionidae) on citrus fruit.

JEENAI. Johnson, J.A. Soderstrom, E.L.; Brandl, D.G.; Houck, L.G.; Wofford, P.L. Lanham, Md. : Entomological Society of America. Since 1985 when eggs of the Fuller rose beetle, *Pantomorus cervinus* (Boheman), were found by Japanese fruit inspectors under the calyxes of California citrus, researchers have sought to develop alternatives to methyl bromide fumigation as a suitable quarantine treatment for this pest. Three different ages of Fuller rose beetle eggs laid on waxed paper were exposed to gamma radiation doses of 10, 50, 100, and 150 Gy. The oldest age class (10-13 d old) was the least susceptible. Egg hatch of the two younger age classes (1-3 and 6-8 d old) was prevented by 50 Gy, whereas 150 Gy was needed to prevent hatch of older eggs. To confirm the efficacy of the method, lemons infested with 10- to 13-d-old Fuller rose beetle eggs were placed in the center of standard cardboard lemon cartons and irradiated at doses averaging 174.1 Gy. Egg hatch from egg clusters infesting untreated lemons averaged (mean +/- SEM) 42.5% +/- 4.66 per lemon. None of the estimated 6,500 eggs infesting

irradiated lemons hatched. Damage of irradiated fruit varied but did not exceed a 6.1% increase compared with damage found in controls. These data show that irradiation of lemons could be an effective quarantine treatment against Fuller rose beetle eggs. Journal of economic entomology. June 1990. v. 83 (3). p. 905-909. Includes references. (NAL Call No.: DNAL 421 J822).

0024

In-transit fumigation of truck-ship containers with hydrogen phosphide--a feasibility study (Insect control, stored product pests, cereals).

Jay, E. Davis, R.; Zehner, J.M. New Orleans : The Region. Advances in agricultural technology. AAT-S - United States, Dept. of Agriculture, Agricultural Research Service, Southern Region. Apr 1983. Apr 1983. (28). 13 p. Includes references. (NAL Call No.: aS21.A75U7).

0025

Methyl bromide quarantine treatment for codling moth (Lepidoptera: Tortricidae) in unshelled walnuts.

JEENAI. Hartsell, P.L. Vail, P.V.; Tebbets, J.S.; Nelson, H.D. Lanham, Md. : Entomological Society of America. Unshelled walnuts were artificially infested with diapausing fifth-instar codling moth, *Cydia pomonella* (L.), and fumigated with 56 g/m³ methyl bromide for 4 h at 15.6 degrees C under a reduced pressure of 100 mm Hg. When 34,959 were treated, 1 larva survived, indicating a survival rate of 2.91 larvae/100,000 treated. The upper 95% CL for this survival rate was 13.8 larvae/100,000 treated. When larval survival rates of methyl bromide fumigation tests of a normally applied domestic treatment were combined with survival rates from quarantine vacuum fumigation tests, the 95% CL survival rates were less than or equal to 0.4 larva/100,000 treated. No significant differences were found in mortality of larvae among the four walnut cultivars tested, nor was variation in the size of walnuts of each cultivar a significant factor. Because whole walnuts sorbed 79.6% of the methyl bromide applied, a relatively high rate of methyl bromide was required to obtain an efficacious treatment. The treatment was accepted by the Japanese Ministry of Agriculture, Forestry and Fisheries in 1986. Journal of economic entomology. Aug 1991. v. 84 (4). p. 1289-1293. Includes references. (NAL Call No.: DNAL 421 J822).

PLANT PRODUCTION – GENERAL

0026

Corn seed treatment in Oklahoma /by J. Harvey McLaughlin.

McLaughlin, J. Harvey 1915-. Stillwater, Okla. : Oklahoma Agricultural Experiment Station, 1946. Cover title. 14 p. ; 21 cm. (NAL Call No.: DNAL 100 Ok4 (1) no.294).

0027

Effect of nursery-produced endomycorrhizal inoculum on growth of redwood seedlings in fumigated soil.

TPLNA. Adams, D. Tidwell, T.; Ritchey, J.; Wells, H. Washington, D.C. : The Service. Tree planters' notes - U.S. Department of Agriculture, Forest Service. Summer 1990. v. 41 (3). p. 7-11. Includes references. (NAL Call No.: DNAL 1.962 C5T71).

0028

Grain fumigation & seed treatment training manual.

Helena, Mont. : Montana Dept. of Agriculture, 1987 . Abstract: This manual, designed as a study guide for commercial applicators involved in seed treatment and fumigation of stored grain, can be used to prepare for the seed treatment test. It presents information on the identification, management and chemical control of stored grain pests, recognition of important seed pathogens, seed treatments, application equipment, and safety concerns. Cover title.~ "January 1987.". ii, 41 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.M9G72).

0029

Survey results on plastic mulch use in the United States.

Schales, F.D. Peoria, Ill. : National Agricultural Plastics Association. Proceedings of the ... National Agricultural Plastics Congress. 1989. (21st). p. 95-101. Includes references. (NAL Call No.: DNAL 309.9 N216).

PLANT PRODUCTION - HORTICULTURAL CROPS

0030

Agricultural plastic uses in California.

Hall, B.J. Peoria, Ill. : National Agricultural Plastics Association. Proceedings of the ... National Agricultural Plastics Congress. 1983. (17th). p. 5-11. (NAL Call No.: DNAL 309.9 N216).

0031

Control of *Heterodera carotae*, *Ditylenchus dipsaci*, and *Meloidogyne javanica* with fumigant and nonfumigant nematocides.

JONEB. Greco, N. Elia, F.; Brandonisio, A. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1986. v. 18 (3). p. 359-364. Includes 15 references. (NAL Call No.: DNAL QL391.N4J62).

0032

Control of pink root disease in onion using solarization and fumigation.

JOSHB. Hartz, T.K. Bogle, C.R.; Bender, D.A.; Avila, F.A. Alexandria, Va. : The Society. Effects of solarization and fumigation on control of pink root disease of onion (*Allium cepa* L.) were determined in microplot studies in 1984. A 62-day solarization treatment significantly improved stand and productivity of Granex 429' onion while decreasing pink root expression. Metam-sodium fumigation gave equivalent improvement in stand and reduction in pink root expression, while causing an even greater onion growth response. Effects of these soil disinfection techniques in onion seedbeds on subsequent field performance of onion transplants were examined in 1985-1986. Fumigation and solarization of individual soil beds virtually eliminated *Pyrenochaeta terrestris* infection of onion transplants. Seedbed treatment had no beneficial effect on yield, bulb diameter, or pink root expression at harvest when transplants were grown to maturity in an infested field. Chemical name used: sodium methylthiocarbamate (anhydrous) (metam-sodium). Journal of the American Society for Horticultural Science. July 1989. v. 114 (4). p. 587-590. Includes references. (NAL Call No.: DNAL 81 S012).

0033

Controlling replant diseases of pome and stone fruits in Northeastern United States by preplant fumigation.

Mai, W.F. Abawi, G.S. St. Paul, Minn., American Phytopathological Society. Plant disease. Nov 1981. v. 65 (11). p. 859-864. 111. 16 ref. (NAL Call No.: 1.9 P69P).

0034

Correlations of *Rotylenchulus reniformis* population densities with 1,3-dichloropropene dosage rate and pineapple yields.

JONEB. Schenck, S. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 735-739. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0035

Disease control in the nursery with special reference to woody and herbaceous perennials / author, Charles C. Powell .

Powell, Charles C. Columbus, Ohio? : Ohio Cooperative Extension Service, Ohio State University, 1987. Abstract: This publication discusses strategies for and steps involved in disease management in the nursery with emphasis on woody and herbaceous perennial ornamentals. It includes information on plant pathogens and the diseases they cause, soil fumigation, lists of common diseases of ornamentals in Ohio, pesticide recommendations, dilution and conversion tables and Ohio Poison Information Centers. Cover title.~ "Agdex 275/636."~ "1/87-4M Revised"--P. 1. 24 p. : col. 111. ; 28 cm. (NAL Call No.: DNAL 275.29 OH32 no.571 1987).

0036

Effect of plastic mulch and fumigation on tomato yield.

Kearney, N.S. Jr. Coffey, D.L. Knoxville, Tenn. : The Station. Tennessee farm and home science - Tennessee Agricultural Experiment Station. Oct/Dec 1982. Oct/Dec 1982. (124). p. 2-4. 111. Includes references. (NAL Call No.: 100 T25F).

0037

Effect of soil fumigation and alternate-year seeding on weed control, bacterial spot incidence, and yield of pepper transplants.

Jaworski, C.A. AR-S0. McCarter, S.M.; Glaze, N.C. Alexandria, Va., American Society for Horticultural Science. HortScience. Oct 1980. v. 15 (5). p. 650-652. 11 ref. (NAL Call No.: SB1.H6).

0038

Effect of tuber source and fumigation on Caladium tuber production in two soil management systems.

Overman, A.J. PFSHA. Harbaugh, B.K. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 175-178. Includes references. (NAL Call No.: 81 F66).

(PLANT PRODUCTION - HORTICULTURAL CROPS)

0039

The effects of drip irrigation and soil fumigation (to control *Macroposthonia xenoplax*) on 'Redglobe' peach yields and growth.

Horton, B.D. Wehunt, E.J.; Edwards, J.H.; Bruce, R.R.; Chesnee, J.L. Alexandria, Va., The Society. Journal of the American Society for Horticultural Science. July 1981. v. 106 (4). p. 438-443. 18 ref. (NAL Call No.: 81 S012).

0040

Effects of fumigant and nonfumigant nematicides on *Belonolaimus longicaudatus* and *Hoplolaimus galeatus* populations and subsequent yield of cabbage.

PLDRA. Rhoades, H.L. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1986. v. 70 (6). p. 581-582. Includes 6 references. (NAL Call No.: DNAL 1.9 P69P).

0041

Effects of fumigant and nonfumigant nematicides on nematode populations and yields of broccoli and squash in Florida.

NMTPA. Rhoades, H.L. Auburn, Ala. : Organization of Tropical American Nematologists. Nematropica. Dec 1987. v. 17 (2). p. 193-198. Includes references. (NAL Call No.: DNAL SB998.N4N4).

0042

Effects of fumigants and systemic pesticides on *Pratylenchus penetrans* and potato yield.

JONEB. Olthof, T.H.A. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Oct 1987. v. 19 (4). p. 424-430. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0043

Efficacy of methyl bromide-chloropicrin and ethylene dibromide-chloropicrin mixtures for control of nematodes (*Paratrichodorus* (N.) christiei, *Meloidogyne incognita*) and *Verticillium* wilt of tomato (*Verticillium albo-atrum*).

Overman, A.J. Jones, J.P. s.l., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. 1980 (pub 1981). v. 93. p. 248-250. 20 ref. (NAL Call No.: 81 F66).

0044

Fumigant development for killing insects on lettuce and other produce /Ruth Lynn Hooper ... et al. . --.

Hooper, Ruth Lynn. Natick, Mass. : US Army Natick Research and Development Center, 1984. Final technical report 1 Oct. 80 - 30 Sept.

83.~ Contract No. D83-13.~ Report No. NATICK/TR-84/046; AD A146661. v. 8 leaves ; 28 cm. Bibliography: leaf 6. (NAL Call No.: DNAL SB981.F8).

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Gassing and regrassing.

Walker, T. Far Hills, N.J. : United States Golf Association. USGA Green Section record. July/Aug 1989. v. 27 (4). p. 10-12. ill. (NAL Call No.: DNAL 60.18 UN33).

0046

Growth and yield response of peaches from fumigating new orchards on "short life" sites

Williams, H.C. Dozier, W.A. Jr.; Evans, C.E. Auburn, The Station. Highlights of agricultural research - Alabama, Agricultural Experiment Station. Winter 1981. v. 28 (4). p. 4. ill. (NAL Call No.: 100 AL1H).

0047

How soil fumigation benefits the California strawberry industry (Weeds and *Verticillium* wilt control).

Wilhelm, S. Paulus, A.O. St. Paul, Minn., American Phytopathological Society. Plant disease. Mar 1980. v. 64 (3). p. 264-270. ill. 20 ref. (NAL Call No.: 1.9 P69P).

0048

Interactions between mycorrhizal fungi, soil fumigation, and growth of grapes in California.

Menge, J.A. AJEVA. Raski, D.J.; Lider, L.A.; Johnson, E.L.V.; Jones, N.O. Davis : American Society of Enologists. American journal of enology and viticulture. 1983. v. 34 (2). p. 117-121. ill. Includes references. (NAL Call No.: 390.9 AM33).

0049

Managing perennial weeds in the nursery.

Meade, J.A. New Brunswick, N.J. : The Service. FS - Cooperative Extension Service, Cook College. Feb 1991. (565). 2 p. (NAL Call No.: DNAL S544.3.N5F7).

0050

***Meloidogyne incognita* resistance characteristics in tomato genotypes developed for processing.**

JONEB. Roberts, P.A. May, D. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1986. v. 18 (3). p. 353-359. Includes 15 references. (NAL Call No.: DNAL QL391.N4J62).

(PLANT PRODUCTION - HORTICULTURAL CROPS)

0051

Nematode population increases on six light-fleshed sweetpotato cultivars and effects on yield.

McSorley, R. O'Hair, S.K.; Parrado, J.L. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. June 1985. v. 97. p. 159-162. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0052

Net economic values of eight soil management practices used in stake tomato production.

JOSHB. Estes, E.A. Skroch, W.A.; Konsler, T.R.; Shoemaker, P.B.; Sorensen, K.A. Alexandria, Va. : The Society. Journal of the American Society for Horticultural Science. Nov 1985. v. 110 (6). p. 812-816. Includes 9 references. (NAL Call No.: DNAL 81 S012).

0053

Off-season land management, soil solarization and fumigation for tomato.

Overman, A.J. S.l. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1985. v. 44. p. 35-39. ill. Includes 9 references. (NAL Call No.: DNAL 56.9 S032).

0054

Papaya fruit yield and quality as influenced by crop rotation, cover cropping, liming, and soil fumigation in Hawaii /O.R. Younge and D.L. Plucknett.

Younge, O. R. 1901-. Plucknett, Donald L., 1931-. Honolulu, Hawaii (2500 Dole St. Krauss Hall 108, Honolulu 96822) : Hawaii Institute of Tropical Agriculture and Human Resources, College of Tropical Agriculture and Human Resources, University of Hawaii, 1981. 30 p. : ill. ; 23 cm. Bibliography: p. 28-30. (NAL Call No.: DNAL 100 H313 (1) no.155).

0055

Plant growth and yield of day-neutral and June-bearing strawberry cultivars in response to soil fumigation.

Gleason, M.L. Nonnecke, G.R.; Fear, C.D. S.l. : North American Strawberry Growers Association. Advances in strawberry production. 1989. v. 8. p. 51-54. Includes references. (NAL Call No.: DNAL SB385.A34).

0056

Record pepper yields (Plastic mulch, fumigation, and trickle irrigation, New Jersey).

Kovalchuk, S. Willoughby, Ohio : Meister Publishing Company. American vegetable grower. Feb 1983. v. 31 (2). p. 44, 46-47. (NAL Call No.: 80 C733).

0057

Replant management strategies influence early growth of apple trees in a sand soil.

HJHSA. Peryea, F.J. Covey, R.P. Alexandria, Va. : American Society for Horticultural Science. HortScience. Dec 1989. v. 24 (6). p. 947-949. Includes references. (NAL Call No.: DNAL SB1.H6).

0058

Response of 'Redchief' strawberry to soil profile modification, soil fumigation and bedtype in the Missouri Ozark Region.

Kaps, M.L. Odneal, M.B. s.l. : North American Strawberry Growers Association. Advances in strawberry production. Spring 1986. v. 5. p. 18-21. Includes references. (NAL Call No.: DNAL SB385.A34).

0059

Response of Russet Burbank potatoes to soil fumigation and nitrogen fertilizers.

APQJA. Davis, J.M. Loescher, W.H.; Hammond, M.W.; Thornton, R.E. Orono, Me. : Potato Association of America. American potato journal. Feb 1986. v. 63 (2). p. 71-79. Includes references. (NAL Call No.: DNAL 75.8 P842).

0060

Soil fumigation controls sudden wilt of melon (Pythium fungus infections, California).

Munnecke, D.E. Laemmlen, F.F.; Bricker, J. Berkeley : The Station. California agriculture - California Agricultural Experiment Station. May/June 1984. v. 38 (5/6). p. 8-9. ill. (NAL Call No.: 100 C12CAG).

0061

Spatial patterns of Verticillium dahliae propagules in potato field soils of Oregon's Columbia Basin.

PLDIDE. Johnson, K.B. Apple, J.D.; Powelson, M.L. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1988. v. 72 (6). p. 484-488. Includes references. (NAL Call No.: DNAL 1.9 P69P).

(PLANT PRODUCTION - HORTICULTURAL CROPS)

0062

Strawberry production in Kentucky.

Strang, J. Brown, G.R.; Jones, R.T. Lexington, Ky. : The Service. HQ - University of Kentucky, College of Agriculture, Cooperative Extension Service. Sept 1988. (16,rev.). 10 p. (NAL Call No.: DNAL SB21.K4K4).

0063

Survey of nematodes associated with almond production in California.

PLDRA. McKenry, M.V. Kretsch, J. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1987. v. 71 (1). p. 71-73. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0064

Tomato production and soil pest control in relation to width of fumigated and mulched bed and soil fumigation rate.

Jaworski, C.A. Phatak, S.C.; Johnson, A.W.; McCarter, S.M. Alexandria, Va., American Society for Horticultural Science. HortScience. Oct 1981. v. 16 (5). p. 667-669. 17 ref. (NAL Call No.: SB1.H6).

0065

Tree and fruit growth of 'Napoleon' cherry in response to rootstock and planting method.

HJHSA. Miller, A.N. Lombard, P.B.; Westwood, M.N.; Stebbins, R.L. Alexandria, Va. : American Society for Horticultural Science. HortScience. Feb 1990. v. 25 (2). p. 176-178. Includes references. (NAL Call No.: DNAL SB1.H6).

0066

Yield component comparison of strawberry plants grown in various cultural systems.

Popenoe, J. Swartz, H.J. s.l. : North American Strawberry Growers Association. Advances in strawberry production. Spring 1985. v. 4. p. 10-14. Includes 11 references. (NAL Call No.: DNAL SB385.A34).

PLANT PRODUCTION – FIELD CROPS

0067

Chemical controls /Bill F. Jones, Donald R. Johnson.

Jones, Bill F. Johnson, Donald R. Little Rock, Ark. : Cooperative Extension Service, University of Arkansas, 1984? . Abstract: This excerpted information about chemical treatment of on-farm stored grain is used in the Arkansas Pesticide Applicator Training Program. The use of rodenticides and insecticide and the equipment used for as well as the different methods of application are discussed and illustrated. Fumigation techniques are also described. Recommended dosage calibrations for all treatments are supplied. Life-threatening situations in grain storage bins are described and illustrated. Safety tips are emphasized. Reprinted from the University of Kentucky publication, "Management of on-farm stored grain", section 5. p. 59-92 : ill. ; 28 cm. (NAL Call No.: DNAL SB190.J62).

0068

Comparison of methyl bromide and other nematicides for control of nematodes in peanut.

AANEFF. Rodriguez-Kabana, R. Robertson, D.G.; King, P.S. Lawrence, Kan. : Society of Nematologists. Annals of applied nematology. Oct 1987. v. 1. p. 56-58. Includes references. (NAL Call No.: DNAL SB998.N4A5).

0069

Continuous cropping under subtropical conditions as affected by methyl bromide-chloropicrin: nematode associations.

Overman, A.J. Mislevy, P. S.I. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1984. v. 43. p. 200-204. Includes 20 references. (NAL Call No.: DNAL 56.9 S032).

0070

Continuous subtropical cropping as affected by soil fumigation: I. Forage and grain yield.

Mislevy, P. Overman, A.J.; Dantzman, C.L. S.I. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1984. v. 43. p. 141-145. Includes 8 references. (NAL Call No.: DNAL 56.9 S032).

0071

Control of potassium deficiency syndrome in cotton by soil solarization.

CAGRA. Weir, W.L. Garber, R.H.; Stapleton, J.J.; Felix-Gastelum, R.; Wakeman, R.J.; DeVay, J.E. Oakland, Calif. : Division of Agriculture and Natural Resources, University of California. California agriculture. May/June 1989. v. 43 (3). p. 26-28. (NAL Call No.: DNAL 100 C12CAG).

0072

Effect of root diseases and nematodes on yield of corn in an irrigated multiple-cropping system with pest management.

PLDIDE. Sumner, D.R. Dowler, C.C.; Johnson, A.W.; Chalfant, R.B.; Glaze, N.C.; Phatak, S.C.; Epperson, J.E. St. Paul, Minn. : American Phytopathological Society. Plant disease. May 1985. v. 69 (5). p. 382-387. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0073

Effects of two-year crop rotations and cultivar resistance on bacterial wilt in flue-cured tobacco.

PLDIDE. Melton, T.A. Powell, N.T. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1991. v. 75 (7). p. 695-698. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0074

Efficacy of fumigant and nonfumigant nematicides for control of *Meloidogyne arenaria* on peanut.

AANEFF. Dickson, D.W. Hewlett, T.E. Lawrence, Kan. : Society of Nematologists. Annals of applied nematology. Oct 1988. v. 2. p. 95-101. Includes references. (NAL Call No.: DNAL SB998.N4A5).

0075

Fumigating may cut Texas root rot losses.

Thacker, G. Silvertooth, J. Spokane, Wash. : The Journal. Arizona farmer-stockman. Apr 1989. v. 68 (4). p. 37. ill. (NAL Call No.: DNAL 6 AR44).

0076

Influence of *Glomus claroideum* (VAM fungus) and phosphorus levels on soybean growth in fumigated microplots.

Skipper, H.D. Struble, J.E. Corvallis, Or. : Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 253. (NAL Call No.: DNAL aQK604.N6 1984).

(PLANT PRODUCTION - FIELD CROPS)

0077

Influence of tillage, fumigation, row location, and fertilizer placement on soybean growth and yield.

RRMSD. Hairston, J.E. Marshall, L.K.; Sanford, J.O.; McConnaughey, P.K. Mississippi State, Miss. : The Station. Research report - Mississippi Agricultural and Forestry Experiment Station. Nov 1988. v. 13 (12). 6 p. Includes references. (NAL Call No.: DNAL S79.E37).

0078

Response of four soybean cultivars in fumigated microplots to inoculation with *Glomus claroideum* (VAM fungus).

Skipper, H.D. Struble, J.E. Corvallis, Or. : Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 252. Includes references. (NAL Call No.: DNAL aQK604.N6 1984).

0079

Root-knot nematode effect on nine cotton cultivars in Mississippi.

CRPSAY. Minton, E.B. Meredith, W.R. Jr. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 1001-1004. Includes references. (NAL Call No.: DNAL 64.8 C883).

PLANT BREEDING

0080

Effect of low temperatures on three embryonic stages of the codling moth (Lepidoptera: Tortricidae).

JEENAI, Moffitt, H.R. Burditt, A.K. Jr. Lanham, Md. : Entomological Society of America. Based on mortality, the order of tolerance of three embryonic stages of codling moth, *Cydia pomonella* (L.), eggs for temperatures near 0 degrees C was red ring white blackhead. Red ring stage eggs were 1.5 times more tolerant of low temperature than were white stage eggs egg 2.5 times more tolerant than blackhead stage eggs. Thirty-six, to 42 d exposure was required for complete mortality on mature Red Delicious' or Golden Delicious' apples. Tolerance of low temperature was not affected by the apple variety used as the substrate for oviposition. Eggs deposited on a substrate other than apples, such as plastic film, were significantly more susceptible to the effects of low temperature. Exposure to low temperatures such as those commonly used for short- or long-term fruit storage shows promise as an alternative to fumigation as a treatment for codling moth eggs on apples and pears after harvest. Journal of economic entomology. Oct 1989. v. 82 (5). p. 1379-1381. Includes references. (NAL Call No.: DNAL 421 J822).

0081

Effect of *Rotylenchulus reniformis* on yield and oil quality of sunflowers.

NMTPA, Heald, C.M. Stein, E. Auburn, Ala. : Organization of Tropical American Nematologists. Nematropica. June 1987. v. 17 (1). p. 1-5. Includes references. (NAL Call No.: DNAL SB998.N4N4).

0082

Effects of ozone or sulfur dioxide on pitch pine seedlings.

JEVQAA, Scherzer, A.J. McClenahan, J.R. Madison, Wis. : American Society of Agronomy. Pitch pine seedlings (*Pinus rigida* Mill.) were fumigated with O₃ or SO₂ to determine their effects on growth and symptom expression. Seedlings fumigated twice with 0.20 microliter O₃L-1 for 4 hr at age 14 and 22 wk had significantly greater shoot weight than those fumigated with 0.30 microliter O₃L-01; 0, 0.08, 0.10, and 0.15 microliter L-1 were intermediate and not significantly different. Root starch content tended to decrease with increasing O₃ with control seedlings being significantly higher than the 0.15, 0.20, and 0.30 microliter O₃L-1 treatments. Root starch of seedlings treated with 0.20, 0.50, 0.60, 0.70, and 0.90 microliter SO₂L-1 was significantly lower than the controls. Seedlings from six families fumigated for 5 wk starting at age 6 wk differed in direction and degree of growth response when exposed to 0.08 and 0.30 microliter O₃L-1. Significant differences existed among families for needle weight, shoot weight, and total weight. No differences were found among O₃ treatments within a family, but

patterns suggest some pitch pine individuals may be sensitive to low O₃ while others are stimulated. Visible injury consisted of light chlorotic mottle on oldest needles. Discriminant function analysis indicated that growth responses were indistinguishable among families receiving no treatment; however, treated seedlings could be classified based on various height measurements and/or shoot weight. Differences in visible injury were apparent among families of seedlings treated with 0.40 microliter O₃L-1, indicating some pitch pine families are more sensitive to O₃ than others. Journal of environmental quality. Jan/Mar 1989. v. 18 (1). p. 57-61. Includes references. (NAL Call No.: DNAL QH540.J6).

0083

Evaluation of a methyl bromide quarantine treatment to control codling moth (Lepidoptera: Tortricidae) on nectarine cultivars proposed for export to Japan.

JEENAI, Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. Lanham, Md. : Entomological Society of America. Our experiments showed that testing required by regulatory agencies to demonstrate the efficacy of a quarantine treatment using 48 g/m³ methyl bromide for 2 h at 21 degrees C or above and 50% load was unnecessary to control codling moth, *Cydia pomonella* (L.), on every nectarine cultivar proposed for export to Japan. Ovipositional tests for codling moth on nine nectarine cultivars showed no differences in acceptability among cultivars that might cause higher populations in harvested fruit and affect quarantine security levels. Measurements of egg chorion and fruit cuticle showed that codling moth eggs were not affected by different nectarine cultivars and other fruit substrates. No differences that would reduce the efficacy of the methyl bromide quarantine treatment were found in codling moth mortality to methyl bromide fumigation in dose-response tests on different substrates, including nectarine, peach, plum, and apple cultivars and waxed paper. A confirmatory test resulted in 100% mortality of 27,174 1-d-old codling moth eggs. The true survival proportion based on all confirmatory tests was less than or equal to 20 per 1 million at the 95% CL. A concentration X time product of (average +/- SD) 68.0 +/- 3.0 g.h/m³ methyl bromide was considered a useful measurement to help maintain treatment security for control of codling moth on all nectarine cultivars. Journal of economic entomology. Apr 1990. v. 83 (2). p. 466-471. Includes references. (NAL Call No.: DNAL 421 J822).

0084

Meloidogyne incognita resistance characteristics in tomato genotypes developed for processing.

JONEB, Roberts, P.A. May, D. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1986. v. 18 (3). p. 353-359. Includes 15 references. (NAL Call No.: DNAL QL391.N4J62).

(PLANT BREEDING)

0085

Methyl bromide residues and desorption rates from unshelled walnuts fumigated with a quarantine treatment for codling moth (Lepidoptera: Tortricidae).

JEENAI. Hartsell, P.L. Tebbets, J.C.; Vail, P.V. Lanham, Md. : Entomological Society of America. California walnuts were fumigated unshelled with a quarantine treatment to control codling moth, *Cydia pomonella* (L.). The treatment was done with 56 g/m³ methyl bromide for 4 h at 15.6 degrees C and a chamber pressure of 100 mm Hg. There were no significant differences in organic or inorganic bromide residues regardless of walnut cultivar or size. Inorganic residues were below the established tolerance level of 200 ppm. The 'Eureka' cultivar, although not significantly different in its desorption rate of residual methyl bromide, had higher organic residues than the other cultivars tested. Residue levels in treated nut meats showed no significant change in inorganic bromide content over a 25-d period. Accumulated inorganic bromide residues in nut meats fumigated once or twice with a domestic methyl bromide schedule (56 g/m³ for 24 h at 15.6 degrees C) to control field infestation and stored-product insects followed by fumigation with the quarantine treatment did not exceed the established tolerance level. Residual methyl bromide in treated nut meats stored unshelled at 1.7 or 10 degrees C was less than or equal to 10 ppb after 70 or 53 d, respectively, whereas those stored at 21 or 32 degrees C had less than or equal to 10 ppb after 20 or 14 d, respectively. Journal of economic entomology. Aug 1991. v. 84 (4). p. 1294-1297. Includes references. (NAL Call No.: DNAL 421 J822).

0086

Nematode population increases on six light-fleshed sweetpotato cultivars and effects on yield.

McSorley, R. O'Hair, S.K.; Parrado, J.L. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. June 1985. v. 97. p. 159-162. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0087

Plant growth and yield of day-neutral and June-bearing strawberry cultivars in response to soil fumigation.

Gleason, M.L. Nonnecke, G.R.; Fear, C.D. s.l. : North American Strawberry Growers Association. Advances in strawberry production. 1989. v. 8. p. 51-54. Includes references. (NAL Call No.: DNAL SB385.A34).

0088

Response of apple cultivars to fumigation with methyl bromide.

HJHSA. Meheriuk, M. Gaunce, A.P.; Dyck, V.A. Alexandria, Va. : American Society for Horticultural Science. HortScience. May 1990. v. 25 (5). p. 538-540. Includes references. (NAL Call No.: DNAL SB1.H6).

0089

Role in Pythium in sugarcane stubble decline: effects on plant growth in field soil.

PHYTAJ. Hoy, J.W. Schneider, R.W. St. Paul, Minn. : American Phytopathological Society. Sugarcane plants grown in sugarcane field soil treated with methyl bromide or metalaxyl showed significant increases in several components of root and shoot growth as compared with plants treated with fosetyl-A1 or grown in untreated field soil. Metalaxyl applied at two rates completely controlled root rot caused by *Pythium arrhenomanes* in a pathogenicity test. In field experiments, significant yield increases were obtained in ratoon crops in metalaxyl-treated plots compared with untreated plots of two sugarcane cultivars. Experimental results suggest that *P. arrhenomanes* functions as a cryptic pathogen and causes significant reductions in sugarcane plant growth in field soil. These findings are discussed with respect to a syndrome in sugarcane known as stubble decline. Phytopathology. Dec 1988. v. 78 (12,pt.2). p. 1692-1696. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

0090

Root-knot nematode effect on nine cotton cultivars in Mississippi.

CRPSAY. Minton, E.B. Meredith, W.R. Jr. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 1001-1004. Includes references. (NAL Call No.: DNAL 64.8 C883).

0091

Tolerances of California nectarine cultivars to methyl bromide quarantine treatments.

JOSHB. Harvey, J.M. Harris, C.M.; Hartsell, P.L. Alexandria, Va. : The Society. The tolerance of six cultivars of nectarine *Prunus persica* (L.) Batsch var. *nectarina* (Ait.) Maxim. to methyl bromide (MB) quarantine treatments was determined. A treatment, 48 g MB/m³ for 2 hr at 21C, which controlled codling moth *Cydia pomonella* (L.), caused no significant phytotoxic response in any of the cultivars. The threshold for injury at the above time and temperature was approximately 64 g MB/m³ in 'Summer Grand', 'May Grand', 'Fantasia', and 'Firebrite'; between 48 and 64 g MB/m³ in 'Red Diamond'; and between 80 and 96 g MB/m³ in 'Spring Red'. All fumigated nectarines were significantly firmer than the control fruit after storage for 7 days at 2.5C,

but subsequently ripened satisfactorily; soluble solids content of the fruit was not affected by the fumigations used in this study. Inorganic bromide residues in fruit treated with the 48 g/m³ dosage at 21C or above ranged from 3.5 to 7.2 ppm, well below the U.S. tolerance of 20 ppm. Organic bromide residues were less than 0.01 ppm within 48 hr after treatment. Journal of the American Society for Horticultural Science. July 1989. v. 114 (4). p. 626-629. Includes references. (NAL Call No.: DNAL 81 S012).

PLANT ECOLOGY

0092

Physiological and biochemical response of sensitive and tolerant *Pinus strobus* L. clones to fumigation with low concentrations of sulfur dioxide / by Robert Theodore Eckert. -.

Eckert, Robert Theodore, 1944-. Ann Arbor, Mich. University Microfilms International 1979. Thesis--Ohio State University, 1978. Facsimile produced by microfilm-xerography. xiii, 123 leaves : ill. Bibliography: leaves 115-123. (NAL Call No.: DISS 79-02,113).

PLANT STRUCTURE

0093

Ceratobasidium oryzae-sativae sp. nov., the teleomorph of **Rhizoctonia oryzae-sativae** and **Ceratobasidium setariae** comb. nov., the probable teleomorph of **Rhizoctonia fumigata** comb. nov.

MYCOAE. Gunnell, P.S. Webster, R.K. Bronx, N.Y.
: The New York Botanical Garden. Mycologia.
Sept/Oct 1987. v. 79 (5). p. 731-736. ill.
Includes references. (NAL Call No.: DNAL 450 M99).

0094

Histological comparisons of white pine (*Pinus strobus*) needles fumigated with ozone and sulfur dioxide singly and in mixtures.

Boone, G.C. Harrisburg, Pa., The Academy.
Proceedings of the Pennsylvania Academy of
Science. 1980. v. 54 (2). p. 128-130. ill. 11
ref. (NAL Call No.: 500 P383).

PLANT NUTRITION

0095

Endomycorrhizal status of certified strawberry nursery stock.

JOSHB. Robertson, W.J. Boyle, C.D.; Brown, H.L. Alexandria, Va. : The Society. Journal of the American Society for Horticultural Science. July 1988. v. 113 (4). p. 525-529. Includes references. (NAL Call No.: DNAL 81 S012).

0096

Growth of little bluestem (*Schizachyrium scoparium*) (Poaceae) in fumigated and nonfumigated soils under various inorganic nutrient conditions.

AJB0AA. Anderson, R.C. Liberta, A.E. Columbus, Ohio : Botanical Society of America. American journal of botany. Jan 1989. v. 76 (1). p. 95-104. Includes references. (NAL Call No.: DNAL 450 AM36).

0097

Influence of *Glomus claroideum* (VAM fungus) and phosphorus levels on soybean growth in fumigated microplots.

Skipper, H.D. Struble, J.E. Corvallis, Or. Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 253. (NAL Call No.: DNAL aQK604.N6 1984).

0098

Interaction among mycorrhizae, soil solarization, metalaxyl, and plants in the field.

PLDIDE. Afek, U. Menge, J.A.; Johnson, E.L.V. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1991. v. 75 (7). p. 665-671. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0099

Mycorrhizal and clipping effects on *Andropogon gerardii* photosynthesis.

AJB0A. Wallace, L.L. Svejcar, T. Baltimore, Md. : Botanical Society of America. American journal of botany. July 1987. v. 74 (7). p. 1138-1142. Includes references. (NAL Call No.: DNAL 450 AM36).

0100

Mycorrhizal species, root age, and position of mycorrhizal inoculum influence colonization of cotton, onion, and pepper seedlings.

JOSHB. Afek, U. Rinaldelli, E.; Menge, J.A.; Johnson, E.L.V.; Pond, E. Alexandria, Va. : The Society. The length of time required for vesicular-arbuscular mycorrhiza (VAM) colonization, the effect of root age, and the position of VAM inoculum with respect to the root system were tested on cotton (*Gossypium hirsutum* L.), onion (*Allium cepa* L.), and pepper (*Capsicum annuum* L.). Colonization of onion by *Glomus deserticola* began 3 days after inoculation and reached 50% of the total root length after 21 days. Colonization by *G. mosseae* and *G. intraradices* began after 12 days and attained 15% and 37%, respectively, after 21 days. In cotton, colonization with *G. deserticola* and *G. intraradices* began 12 days following inoculation and increased to 200% and 18%, respectively, after 21 days. Colonization of cotton by *G. mosseae* was poor. In pepper, colonization with *G. deserticola*, *G. mosseae*, and *G. intraradices* began 3, 6, and 6 days after inoculation and, after 21 days, reached 60%, 13%, and 10%, respectively. In a second experiment, rapid colonization by *G. deserticola* took place in 3-day-old onion seedlings and increased to 51% 3 days after inoculation. Ten- and 17-day-old seedlings were far less responsive to VAM colonization but became highly infected at 30 days when new roots were produced. In a third experiment, inoculum placement 3 cm below seeds at planting in the field was the most effective for promoting colonization of cotton and onion by VAM. In fumigated field soil, mycorrhizae increased cotton growth an average of 28% when inoculum was applied below seeds compared to one- or two-sided band applications. Even in nonfumigated field soil, inoculum placed 3 cm below the seed and inoculum placed in a band at one side 2 weeks after planting significantly increased cotton growth. In onion, mycorrhizal inoculation improved growth in fumigated soil when it was placed below the seed, but did not stimulate growth in nonfumigated soil. Journal of the American Society for Horticultural Science. Nov 1990. v. 115 (6). p. 938-942. Includes references. (NAL Call No.: DNAL 81 S012).

0101

Response of citrus seedlings to various field inoculation methods with *Glomus deserticola* in fumigated nursery soils.

JOSHB. Ferguson, J.J. Menge, J.A. Alexandria, Va. : The Society. Journal of the American Society for Horticultural Science. Mar 1986. v. 111 (2). p. 288-292. Includes 29 references. (NAL Call No.: DNAL 81 S012).

0102

Response of four soybean cultivars in fumigated microplots to inoculation with *Glomus claroideum* (VAM fungus).

Skipper, H.D. Struble, J.E. Corvallis, Or. : Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 252. Includes references. (NAL Call No.: DNAL aQK604.N6 1984).

36 (2). p. 224-245. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0103

Slash pine growth and response to fertilizer after application of pesticides to the planting site (*Pinus elliotii* var. *elliotii*, soil fumigation, *Meloidodera floridensis*).

Bengtson, G.W. Smart, G.C. Jr. Washington, D.C., Society of American Foresters. Forest science. Sept 1981. v. 27 (3). p. 487-502. 17 ref. (NAL Call No.: 99.8 F7632).

0104

Soil pH and nitrogen influence *Pisolithus ectomycorrhizal* development and growth of loblolly pine seedlings.

FOSCA. Marx, D.H. Bethesda, Md. : Society of American Foresters. Five families of loblolly pine were grown from April to February in fumigated soil at pH 4.8, 5.8, and 6.8. All microplots received vegetative inoculum of *Pisolithus tinctorius* (Pt) and three, six, or nine applications of NH₄N0₃ at 50 kg N/ha/application through August, which totaled 150, 300, or 450 kg N/ha. Vegetative inoculum of Pt buried in soil lost significant viability after 54 days at soil pH 6.8. Inoculum viability declined in all treatments after 81 days, but it was only a little over a third as viable at pH 6.8 as at lower pH levels. Up to three applications of NH₄N0₃ at 50 kg N/ha each did not affect inoculum viability. The five test families of loblolly pine reacted similarly to soil treatments. Seedling heights, root-collar diameters, and top dry weights were more affected by soil pH than by application of N. As soil pH increased, seedling growth decreased. Dry weight of roots, total length of lateral roots, and number of short roots were not significantly influenced by either soil treatment. Total Pt ectomycorrhizal ratings (combining number of mycorrhizae and proportion of different morphological types) were about one-fourth as much at pH 6.8 as in more acid soil conditions. Applications of NH₄N0₃ resulting in soil concentrations of N0₃-N ranging from 60 to 120 kg/ha and NH₄-N ranging from 90 to 130 kg/ha at pH 4.8 and 5.8 were associated with the most abundant Pt ectomycorrhizal development. Increased N applications increased Pt development at pH 5.8 and 6.8. Calcium equivalent treatments, using CaSO₄ at similar Ca concentrations, suggested seedling response was due to soil pH and not Ca concentrations. Forest science. June 1990. v.

PLANT PHYSIOLOGY AND BIOCHEMISTRY

0105

Activation of C3 and binding to *Aspergillus fumigatus* conidia and hyphae.

INFIBR. Kozel, T.R. Wilson, M.A.; Farrell, T.P.; Levitz, S.M. Washington, D.C. : American Society for Microbiology. Infection and immunity. Nov 1989. v. 57 (11). p. 3412-3417. ill. Includes references. (NAL Call No.: DNAL QR1.I57).

0106

Allergic bronchopulmonary aspergillosis: reactivity of IgE (immunoglobulin E) and IgG (immunoglobulin G) antibodies with antigenic components of *Aspergillus fumigatus* (IgE/IgG antigen complexes).

Longbottom, J.L. JACIB. St. Louis : C.V. Mosby Co. The Journal of allergy and clinical immunology. Dec 1983. v. 72 (6). p. 668-675. ill. Includes references. (NAL Call No.: 448.8 J8236).

0107

Antigens and allergens of *Aspergillus fumigatus*. I. Characterization by quantitative immunoelectrophoretic techniques.

JACIB. Longbottom, J.L. Austwick, P.K.C. St. Louis, Mo. : C.V. Mosby Co. The Journal of allergy and clinical immunology. July 1986. v. 78 (1,pt.1). p. 9-17. ill. Includes references. (NAL Call No.: DNAL 448.8 J8236).

0108

Antigens and allergens of *Aspergillus fumigatus*. II. Their further identification and partial characterization of a major allergen (Ag 3).

JACIB. Longbottom, J.L. St. Louis, Mo. : C.V. Mosby Co. The Journal of allergy and clinical immunology. July 1986. v. 78 (1,pt.1). p. 18-24. ill. Includes references. (NAL Call No.: DNAL 448.8 J8236).

0109

Changes in foliar concentration of abscisic acid in soybean in response to sulfur dioxide fumigation.

JEVQAA. Gupta, G. Sandhu, R.; Mulchi, C. Madison, Wis. : American Society of Agronomy. Soybean *Glycine max* (L.) Merr. cv. Elf plants were exposed to 0.0, 0.05, 0.2, and 0.4 micromole mol⁻¹ SO₂ in a controlled environment. The amount of abscisic acid (ABA) was measured, using an enzyme linked immunosorbent assay (ELISA). after 1, 2, or 4 h of exposure as well as after 18 h of recovery period. With 0.05 micromole mol⁻¹ the ABA concentrations in soybean leaves were 28 and 141% higher than the control, with 1 and 4 h exposures, respectively; after an 18-h recovery period, the ABA concentrations were still

higher (23.6 and 42.8% for the 1 and 4 h exposures, respectively). Absciscic acid concentration increased in soybean leaves both with an increase in the concentration of SO₂ and the time of exposure. Journal of environmental quality. Jan/Mar 1991. v. 20 (1). p. 151-152. Includes references. (NAL Call No.: DNAL QH540.J6).

0110

The effect of nitric oxide fumigation at two CO₂ concentrations on net photosynthesis and stomatal resistance of tomato (*Lycopersicon lycopersicum* L. cv. Abunda).

NEPHA. Bruggink, G.T. Wolting, H.G.; Dassen, J.H.A.; Bus, V.G.M. New York, N.Y. : Cambridge University Press. The New phytologist. Oct 1988. v. 110 (2). p. 185-191. Includes references. (NAL Call No.: DNAL 450 N42).

0111

Effect of soil fumigation on nitrogenase activity (C₂H₂ reduction) of tropical legumes.

Reddy, K.C. Prine, G.M.; Gaskins, M.H. S.I. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1984. v. 43. p. 132-137. ill. Includes 22 references. (NAL Call No.: DNAL 56.9 S032).

0112

Effect of soil fumigation on the early growth and production of 'Delicious' apple trees (Specific apple replant disease).

Koch, B.L. Covey Jr., R.P.; Haglund, W. Alexandria, Va., The Society. Journal of the American Society for Horticultural Science. Nov 1980. v. 105 (6). p. 887-890. ill. 15 ref. (NAL Call No.: 81 S012).

0113

Effects of open-air fumigation with sulphur dioxide on the growth and yield of winter barley.

NEPHA. McLeod, A.R. Roberts, T.M.; Alexander, K.; Cribb, D.M. New York, N.Y. : Cambridge University Press. The New phytologist. Literature review. May 1988. v. 109 (1). p. 67-78. ill. Includes references. (NAL Call No.: DNAL 450 N42).

0114

Effects of simulated ozone and sulfur dioxide fumigations on soybeans in open-top field chambers (Air pollution).

Pratt, G.C. Pittsburgh, Pa. : Air Pollution Control Association. Proceedings ... APCA annual meeting. 1983. v. 1 (76th). p. 83-2.1/1-83-2.1/21. ill. Includes references. (NAL Call No.: TD881.A56).

0115

Foliar fatty acids and sterols of soybean field fumigated with SO₂ (sulfur dioxide).

Grunwald, C. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Oct 1981. v. 68 (4). p. 868-871. 21 ref. (NAL Call No.: 450 P692).

0116

Growth and endomycorrhizal development of broadleaf seedlings in fumigated nursery soil (*Glomus fasciculatus*, *Glomus mosseae*).

Riffle, J.W. FS-RM. Washington, D.C., Society of American Foresters. Forest science. Sept 1980. v. 26 (3). p. 403-413. 111. 17 ref. (NAL Call No.: 99.8 F7632).

0117

Growth/environment interactions in SO₂ responses of grasses.

Mansfield, T.A. Jones, T. Stanford, Calif. : Stanford University Press, 1985. Sulfur dioxide and vegetation : physiology, ecology, and policy issues / edited by William E. Winner, Harold A. Mooney, and Robert A. Goldstein. p. 332-345. (NAL Call No.: DNAL QK753.S85S85).

0118

Growth of little bluestem (*Schizachyrium scoparium*) (Poaceae) in fumigated and nonfumigated soils under various inorganic nutrient conditions.

AJB0AA. Anderson, R.C. Liberta, A.E. Columbus, Ohio : Botanical Society of America. American journal of botany. Jan 1989. v. 76 (1). p. 95-104. Includes references. (NAL Call No.: DNAL 450 AM36).

0119

Growth response of green and white ash seedlings to ozone, sulfur dioxide, and simulated acid rain.

FOSCA. Chappelka, A.H. Chevone, B.I.; Burk, T.E. Bethesda, Md. : Society of American Foresters. Nine-week-old green (*Fraxinus pennsylvanica* Marsh.) and white (*F. americana* L.) ash were exposed to O₃ and/or SO₂ (control, 0.10 ppm O₃, 0.08 ppm SO₂, or 0.10 ppm O₃ + 0.08 ppm SO₂) for 4 h d⁻¹, 5 d wk⁻¹ in combination with simulated rain (pH 3.0, 4.3 or 5.6, 1 h d⁻¹, 2 d wk⁻¹ at 0.75 cm h⁻¹) for 6 weeks, under controlled laboratory conditions, with rain applied either just before or after fumigation. Across all rain treatments, white ash biomass was suppressed by the application of O₃ and cumulative shoot elongation of green ash exposed to O₃ and/or SO₂ was less than controls. The combination of O₃ + SO₂ did not affect the growth of either species more than the pollutants applied alone. Leaf area ratio (LAR) and root to shoot ratio (RSR) exhibited

quadratic responses to rain pH in green ash, across all pollutant treatments. Significant pollutant X pH interactions occurred in leaf weight ratio (LWR) in green ash and LAR and RSR in white ash. Significant linear increases in LAR and decreases in RSR, with decreasing pH, were observed for O₃ and SO₂-treated white ash. These findings are discussed relative to implications of the effects of gaseous pollutants in combination with acid rain on green and white ash growth. FOR. SCI. 34(4):1016-1029. Forest science. Dec 1988. v. 34 (4). p. 1016-1029. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0120

Growth responses of woody species to long- and short-term fumigation with sulfur dioxide.

Jensen, K.F. FS-NE~FS-NE~FS-NC. Doehinger, L.S. Broomall, Pa., The Station. USDA Forest Service Research Paper NE - United States, Northeastern Forest Experiment Station. 1979. 1979. (442). 7 p. 111. 19 ref. (NAL Call No.: A99.9 F7622UN).

0121

Impact of atmospheric pollution on linear furanocoumarin content in celery.

JCEDD. Dercks, W. Trumble, J.; Winter, C. New York, N.Y. : Plenum Press. In a series of laboratory studies, a single 4-hr acidic fog at pH levels associated with commercial celery (*Apium graveolens* L.) production near major population centers in California was found to stimulate development of psoralen, bergapten, xanthotoxin, and isopimpinellin within 24 hr and for at least 120 hr after exposure. At 120 hr posttreatment, the concentrations of phototoxin furanocoumarins (psoralen + bergapten + xanthotoxin) increased 540% in the leaves (to 135 micrograms/g fresh weight) and 440% in the petioles (to 55.56 micrograms/g fresh weight) of celery exposed to a pH 2.0 fog as compared to plants exposed to control fogs (pH 6.3-6.5). Concentrations of these compounds in test plants were 7.5 times higher than the amount known to produce contact dermatitis. The nonphototoxic isopimpinellin increased more than threefold in the leaves (to 39.23 micrograms/g fresh weight, 120 hr) and petioles (to 25.88 micrograms/g fresh weight) as compared to control plants. In contrast, a single ozone fumigation at 0.20 ppm for 2 hr generally reduced concentrations of phototoxin furanocoumarin in leaves of celery within 24 hr (ozone-treated plants = 37.9, controls = 69.5 micrograms/g fresh weight), but levels of these chemicals in leaves of ozone-fumigated plants increased rapidly and concentrations were not significantly different at 120 hr. Isopimpinellin concentrations in foliage followed a similar trend (at 24 hr, control = 25.11, ozone treated = 10.96 micrograms/g fresh weight, no difference at 120 h). In petioles, none of the linear furanocoumarin levels differed significantly at 120 hr posttreatment. Journal of chemical ecology. Feb 1990. v. 16 (2). p. 443-454. Includes references. (NAL Call No.: DNAL QD415.A1J6).

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0122

The impact of sulfur dioxide fumigation on photosynthetic and ultrastructural responses of mesophyll cells in developing *Pinus strobus* needles. III. Transition zone.

Crang, R.E. Vassilyev, A.E.; Kravkina, I.M. Broomall, PA : Northeastern Forest Experiment Station, 1989? . Air pollution effects on vegetation, including forest ecosystems : proceedings of the Second US-USSR Symposium / edited by Reginald D. Noble, Juri L. Martin, and Keith F. Jensen. Papers presented at an International Conference, September 13-25, 1988, at Corvallis, Oregon; Raleigh, North Carolina; Gatlinburg, Tennessee. p. 91-96. ill. Includes references. (NAL Call No.: DNAL aQK751.U7 1988).

0123

Influence of *Glomus claroideum* (VAM fungus) and phosphorus levels on soybean growth in fumigated microplots.

Skipper, H.D. Struble, J.E. Corvallis, Or. : Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 253. (NAL Call No.: DNAL aQK604.N6 1984).

0124

Influence of nitrogen fertility levels on S02 fumigation response in soybeans.

Muller, R.N. Miller, J.E. Argonne, Ill. : The Laboratory. Annual report - Argonne National Laboratory. Radiological and Environmental Research Division. Jan/Dec 1976. (ANL-76-88,pt.3). p. 6-8. Includes references. (NAL Call No.: DNAL 173 AT743).

0125

Measurement of specific IgE (immunoglobulin E) and IgG (immunoglobulin G) antibodies against *Aspergillus fumigatus* antigen in patient sera by use of enzyme immunoassays: influence of different procedures of antigen immobilization.

Van der Heide, S. Kauffman, H.F.; De Vries, K. St. Louis, Mo. : C.V. Mosby Co. The Journal of allergy and clinical immunology. June 1984. v. 73 (6). p. 813-818. ill. Includes references. (NAL Call No.: 448.8 J8236).

0126

Methyl bromide inhibits ripening and ethylene production in tomato (*Lycopersicon esculentum* Mill.) fruit.

JPGRDI. Brecht, J.K. Huber, D.J.; Sherman, M.; Lee, J. New York, N.Y. : Springer. Journal of plant growth regulation. 1986. v. 5 (1). p.

29-35. Includes references. (NAL Call No.: DNAL QK745.J6).

0127

Mycorrhizal and clipping effects on *Andropogon gerardii* photosynthesis.

AJBOA. Wallace, L.L. Svejcar, T. Baltimore, Md. : Botanical Society of America. American journal of botany. July 1987. v. 74 (7). p. 1138-1142. Includes references. (NAL Call No.: DNAL 450 AM36).

0128

Preconditioning grapefruit callus tissue reduces methyl bromide-induced K+ leakage.

HJHSA. Forney, C.F. Peterson, S.J.; Hartsell, P. Alexandria, Va. : American Society for Horticultural Science. HortScience. June 1990. v. 25 (6). p. 669-670. Includes references. (NAL Call No.: DNAL SB1.H6).

0129

The relationship between changes in photosynthesis and growth for radish plants fumigated with S02 and O3.

NEPHA. Atkinson, C.J. Robe, S.V.; Winner, W.E. New York, N.Y. : Cambridge University Press. The New phytologist. Oct 1988. v. 110 (2). p. 173-184. Includes references. (NAL Call No.: DNAL 450 N42).

0130

Response of four soybean cultivars in fumigated microplots to inoculation with *Glomus claroideum* (VAM fungus).

Skipper, H.D. Struble, J.E. Corvallis, Or. : Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 252. Includes references. (NAL Call No.: DNAL aQK604.N6 1984).

0131

Response of photosynthesis and cellular antioxidants to ozone in *Populus* leaves.

PLPHA. Gupta, A.S. Alscher, R.G.; McCune, D. Rockville, Md. : American Society of Plant Physiologists. Atmospheric ozone causes formation of various highly reactive intermediates (e.g. peroxy and superoxide radicals, H2O2 etc.) in plant tissues. A plant's productivity in environments with ozone may be related to its ability to scavenge the free radicals formed. The effects of ozone on photosynthesis and some free radical scavengers were measured in the fifth emergent leaf of

poplars. Clonal poplars (*Populus deltoides* X *Populus* cv *caudina*) were fumigated with 180 parts per billion ozone for 3 hours. Photosynthesis was measured before, during, and after fumigation. During the first 90 minutes of ozone exposure, photosynthetic rates were unaffected but glutathione levels and superoxide dismutase activity increased. After 90 minutes of ozone exposure, photosynthetic rates began to decline while glutathione and superoxide dismutase continued to increase. Total glutathione (reduced plus oxidized) increased in fumigated leaves throughout the exposure period. The ratio of GSH/GSSG also decreased from 12.8 to 1.2 in ozone exposed trees. Superoxide dismutase levels increased twofold in fumigated plants. After 4 hours of ozone exposure, the photosynthetic rate was approximately half that of controls while glutathione levels and superoxide dismutase activity remained above that of the controls. The elevated antioxidant levels were maintained 21 hours after ozone exposure while photosynthetic rates recovered to about 75% of that of controls. Electron transport and NADPH levels remained unaffected by the treatment. Hence, elevated antioxidant metabolism may protect the photosynthetic apparatus during exposure to ozone. Plant physiology. June 1991. v. 96 (2). p. 650-655. Includes references. (NAL Call No.: DNAL 450 P692).

0132

Role in Pythium in sugarcane stubble decline: effects on plant growth in field soil.
PHYTAJ. Hoy, J.W. Schneider, R.W. St. Paul, Minn. : American Phytopathological Society. Sugarcane plants grown in sugarcane field soil treated with methyl bromide or metalaxyl showed significant increases in several components of root and shoot growth as compared with plants treated with fosetyl-Al or grown in untreated field soil. Metalaxyl applied at two rates completely controlled root rot caused by *Pythium arrhenomanes* in a pathogenicity test. In field experiments, significant yield increases were obtained in ratoon crops in metalaxyl-treated plots compared with untreated plots of two sugarcane cultivars. Experimental results suggest that *P. arrhenomanes* functions as a cryptic pathogen and causes significant reductions in sugarcane plant growth in field soil. These findings are discussed with respect to a syndrome in sugarcane known as stubble decline. Phytopathology. Dec 1988. v. 78 (12,pt.2). p. 1692-1696. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

0133

Role of glutathione in reducing residues of methyl bromide in fumigated commodities.
PCBPB. Starratt, A.N. Bond, E.J. Duluth, Minn. : Academic Press. Pesticide biochemistry and physiology. Oct 1990. v. 38 (2). p. 178-185. Includes references. (NAL Call No.: DNAL SB951.P49).

PLANT TAXONOMY AND GEOGRAPHY

0134

Ceratobasidium oryzae-sativae sp. nov., the teleomorph of *Rhizoctonia oryzae-sativae* and *Ceratobasidium setariae* comb. nov., the probable teleomorph of *Rhizoctonia fumigata* comb. nov.

MYCOAE. Gunnell, P.S. Webster, R.K. Bronx, N.Y.
: The New York Botanical Garden. Mycologia.
Sept/Oct 1987. v. 79 (5). p. 731-736. ill.
Includes references. (NAL Call No.: DNAL 450 M99).

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0135

Agricultural chemicals Book II Miscellaneous chemicals fumigants, growth regulators, repellents, and rodenticides / by W.T. Thomson. Thomson, W. T. Fresno, CA : Thomson Publications, c1988. Cover title: Agricultural chemicals, Book III -- fumigants, growth regulators, repellents, and rodenticides.~ Includes index. xviii, 210 p. : ill. ; 23 cm. (NAL Call No.: DNAL SB951.T48 1988).

0136

Banning soil fumigants: what cost? Barse, J.R. Ferguson, W.L. Rockville, Md. : The Service. Agricultural outlook AO - U.S. Department of Agriculture, Economic Research Service. June 1989. (153). p. 32-34. (NAL Call No.: DNAL aHD1751.A42).

0137

Cherry spray schedule for New Jersey home orchards. Race, S.R. Springer, J.K. New Brunswick, N.J. : The Service. FS - Cooperative Extension Service, Cook College. 1986. (115). 2 p. (NAL Call No.: DNAL S544.3.N5F7).

0138

Concepts and recent developments in regulatory treatments. Roth, H. Boca Raton, Fla. : CRC Press, c1989. Plant protection and quarantine / Robert P. Kahn. Literature review. v. 3 p. 117-144. Includes references. (NAL Call No.: DNAL SB980.K34).

0139

Demonstration and research pest control category 10 / Charles E. Long, Erick B. Nilson, Jerry Condray . Long, Charles E. Nilson, Erick B.; Condray, Jerry. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1987 . Abstract: This certification study guide provides information on pesticide laws, pesticide-organism interactions, Integrated Pest Management (IPM), environmental hazards and safety, and liability concerns. Practice multiple choice questions follow each section. Cover title.~ At head of title: Commercial pesticide applicator certification and recertification study manual.~ "S-17, September 1987"--P. 4 of cover. 16 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.K2D4 1987).

0140

Effectiveness of methyl bromide on weeds, grass, insects, and soil diseases. Brown, M.E. Fremont, Calif. : California Weed Conference. Proceedings - California Weed Conference. Meeting held January 21-23, 1991, Santa Barbara, California. 1991. (43rd). p. 185-187. Includes references. (NAL Call No.: DNAL 79.9 C122).

0141

Evaluation of methyl bromide, Basamid granular, and solar heating for pre-planting pest control for fall-sown eastern redcedar at Bessey Nursery. Hildebrand, D.M. Dinkel, G.B. Denver : The Service. Technical report R2 - United States Forest Service, Forest Pest Management. Jan 1988. (41). 13 p. Includes references. (NAL Call No.: DNAL aSD11.A422).

0142

Fumigant development for killing insects on lettuce and other produce / Ruth Lynn Hooper ... et al. . --. Hooper, Ruth Lynn. Natick, Mass. : US Army Natick Research and Development Center, 1984. Final technical report 1 Oct. 80 - 30 Sept. 83.~ Contract No. D83-13.~ Report No. NATICK/TR-84/O46; AD A146661. v, 8 leaves ; 28 cm. Bibliography: leaf 6. (NAL Call No.: DNAL SB981.F8).

0143

Fungicides, nematocides, and soil fumigants. Boone, D.M. Grau, C.R.; Severson, W.R.; Worf, G.L. Madison, Wis., The Programs. Publication - Cooperative Extension Programs, University of Wisconsin Extension. Jan 1981. Jan 1981. (A2336). 4 p. (NAL Call No.: S544.3.W6W53).

0144

Grain fumigation exam : certification and re-certification. - . (S.I. North Dakota Cooperative Extension Service? 1980?). Caption title ~Pesticide Applicator Training Collection. 4 leaves ; 28 cm. (NAL Call No.: SB955.G7).

0145

Peach and nectarine spray schedule for New Jersey home orchards. Race, S.R. Springer, J.K. New Brunswick, N.J. : The Service. FS - Cooperative Extension Service, Cook College. 1986. (113). 2 p. (NAL Call No.: DNAL S544.3.N5F7).

(PROTECTION OF PLANTS)

0146

Pesticide applicator training regulatory pest control .

West Lafayette, Ind. : Purdue University, 1988? . Abstract: The training manual on regulatory pest control examines regulated pests and quarantines and the fumigants, herbicides, and insecticides used in their control. Major topics include controlling insect pests and diseases on ornamentals, weeds, nematodes, common household pests, blackbirds, pigeons and mice and rats. Detailed information on fumigation (i.e. space and structural), gas masks, protective clothing, safety practices, toxicology, sprayer equipment and calibration is presented. Cover title.~ Category 9. 1 v. (various pagings) : ill. (some col.) ; 30 cm. (NAL Call No.: DNAL SB951.P4631).

0147

Plum spray schedule for New Jersey home orchards.

Race, S.R. Springer, J.K. New Brunswick, N.J. : The Service. FS - Cooperative Extension Service, Cook College. 1986. (116). 2 p. (NAL Call No.: DNAL S544.3.N5F7).

0148

Soil fumigants--selection and use (Disease and pest control in greenhouse or nursery beds).

Shurtleff, M. Overland Park, Kan., Intertec. Grounds maintenance. Aug 1980. v. 15 (8). p. 26, 28, 32. ill. (NAL Call No.: SB476.G7).

0149

Soil fumigation by chemigation with metham.

Adams, P.B. St. Paul, Minn. : APS Press, c1986. Methods for evaluating pesticides for control of plant pathogens / edited by Kenneth D. Hickey ; prepared jointly by the American Phytopathological Society and the Society of Nematologists. p. 270-272. ill. Includes references. (NAL Call No.: DNAL SB960.M47 1986).

0150

Soil fumigation in bareroot tree nurseries.

Landis, T.D. Campbell, S.J. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 13-28. ill. Includes references. (NAL Call No.: DNAL aSD11.A42).

0151

Soil fumigation manual.

WUEXA. Pullman, Wash. : The Service. Extension bulletin - Washington State University, Cooperative Extension Service. Oct 1987. (1336,rev.). 10 p. ill. Includes references. (NAL Call No.: DNAL 275.29 W27P).

0152

Tennessee growers are making the most of mulch.

Coffey, D.L. Willoughby, Ohio : Meister Publishing Company. American vegetable grower. Apr 1984. v. 32 (4). p. 12, 32. ill. (NAL Call No.: DNAL 80 C733).

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0153

Aluminum phosphide (phostoxin) as a burrow fumigant for ground squirrel control (Spermophilus beecheyi, California).
Salmon, T.P. PVPCB. Gorenzel, W.P.; Bentley, W.J. Davis, Calif. : University of California. Proceedings ... Vertebrate Pest Conference. June 1982. (10th). p. 143-146. Includes references. (NAL Call No.: SB950.A1V4).

0154

Comparison of fumigant gases used for rabbit control in Great Britain.
PVPCB. Ross, J. Davis, Calif. : University of California. Proceedings ... Vertebrate Pest Conference. June 1986. (12th). p. 153-157. Includes references. (NAL Call No.: DNAL SB950.A1V4).

0155

Development of a simple two-ingredient pyrotechnic fumigant (for burrowing rodent and predator control).
Savarie, P.J. Tigner, J.R.; Elias, D.J.; Hayes, D.J. Davis, Calif., University of California. Proceedings ... Vertebrate Pest Conference. 1980. (9th). p. 215-221. 14 ref. (NAL Call No.: SB950.A1V4).

0156

Efficacy of a two-ingredient fumigant on Richardson's ground squirrels.
PVPCB. Matschke, G.H. Fagerstone, K.A. Davis, Calif. : University of California. Proceedings ... Vertebrate Pest Conference. June 1984. (11th). p. 17-19. Includes references. (NAL Call No.: DNAL SB950.A1V4).

0157

Efficacy of two gas cartridge formulations in killing woodchucks in burrows.
WLSBA. Dolbeer, R.A. Bernhardt, G.E.; Seamans, T.W.; Woronecki, P.P. Bethesda, Md. : The Society. Wildlife Society bulletin. Summer 1991. v. 19 (2). p. 200-204. Includes references. (NAL Call No.: DNAL SK357.A1W5).

0158

Evaluation methods for fumigant control of eastern woodchuck (Pest of orchards, gardens, crops).
Byers, R.E. Cleveland, Harvest Publishing Co. Pest control. Sept 1980. v. 48 (9). p. 24, 26, 61. ill. 4 ref. (NAL Call No.: 449.8 EX8).

0159

An innovative approach to pocket gopher fumigation.
PVPCB. Plesse, L.F. Davis, Calif. : University of California. Proceedings ... Vertebrate Pest Conference. June 1984. (11th). p. 24. (NAL Call No.: DNAL SB950.A1V4).

0160

Institutional, industrial, structural, health-related pest control / Mary L. Grodner, Jack L. Bagent .
Grodner, Mary L. Bagent, Jack L. Baton Rouge? : Louisiana Cooperative Extension Service, Louisiana State University Agricultural Center. 1985? . This Louisiana state publication is a training manual for pesticide applicators who seek certification in industrial, institutional, structural and health-related pest control. Regulatory requirements, sanitation and fumigation are discussed. Labels and labeling warnings and information are explained. Protective clothing advice and environmental safety tips are included. A detailed chart cross-references the effects of pesticide chemicals on the human body. Insect pests are described and illustrated. Cover title. ~ "7/85"--P. 2 of cover. 66 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB951.G77).

0161

An introductory overview to California ground squirrel control.
PVPCB. Salmon, T.P. Schmidt, R.H. Davis, Calif. : University of California. Proceedings ... Vertebrate Pest Conference. June 1984. (11th). p. 32-37. ill. Includes references. (NAL Call No.: DNAL SB950.A1V4).

0162

Managing woodchuck problems in Kentucky.
Barnes, T.G. Lexington, Ky. : The Service. FOR - Kentucky University, Cooperative Extension Service. Mar 1991. (44). 3 p. (NAL Call No.: DNAL SD436.K4A2).

PESTS OF PLANTS - INSECTS

0163

Acetaldehyde fumigation at reduced pressures to control the green peach aphid (*Myzus persicae*) on wrapped and packed head lettuce (Chemical, varieties).

Stewart, J.K. AR-W. Aharoni, Y.; Hartsell, P.L.; Young, D.K. College Park, Md., Entomological Society of America. Journal of economic entomology. Feb 15, 1980. v. 73 (1). p. 149-152. 111. 11 ref. (NAL Call No.: 421 J822).

0164

Acute ozone stress on eastern cottonwood (*Populus deltoides* Bartr.) and the pest potential of the aphid, *Chaitophorus populicola* Thomas (Homoptera: Aphididae).

EVETEX. Coleman, J.S. Jones, C.G. College Park, Md. : Entomological Society of America. The effect of acute ozone exposure of eastern cottonwood (*Populus deltoides* Bartr.) on the survivorship, reproduction, and development of the aphid *Chaitophorus populicola* Thomas (Homoptera: Aphididae) was investigated. Cottonwoods were exposed to 397 microgram/m³ (0.20 ppm) ozone or charcoal-filtered air and infested with aphids on leaf plastochron index 5, 40 h after fumigation. Aphid performance was not significantly different on plants exposed to ozone compared with charcoal-filtered air-treated control plants. These data do not support the notion that aphid performance will directly increase on air pollution-stressed plants. We also examined settling and feeding preference of aphids for cottonwood leaves of different developmental ages. Aphids significantly preferred leaf plastochron index 5 to all other leaf ages. These data support hypotheses relating aphid leaf preference to stages of leaf development. Reproduction of the cottonwood leaf rust fungus (*Melampsora medusae* Thum.) and the imported willow leaf beetle (*Plagioderia versicolora* Laicharting) are reduced on ozone-fumigated plants (reported elsewhere). If aphid populations are affected by competition with these cottonwood pests for leaf resources, then aphid pest potential may actually increase in areas characterized by episodic ozone concentrations because of ozone-induced decreases in populations of *M. medusae* and *P. versicolora*. Environmental entomology. Apr 1988. v. 17 (2). p. 207-212. Includes references. (NAL Call No.: DNAL QL461.E532).

0165

Aluminum-surfaced mulch: an approach to the control of tomato spotted wilt virus in solanaceous crops.

PLDIDE. Greenough, D.R. Black, L.L.; Bond, W.P. St. Paul, Minn. : American Phytopathological Society. Plant disease. Oct 1990. v. 74 (10). p. 805-808. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0166

Blowing hot and cold: what consumers need to know about new developments in structural pest control.

Atkinson, T.H. Oakland, CA : Univ. of California, Cooperative Extension, Agriculture and Natural Resources. Today's consumer - Cooperative Extension, University of California. Jan/Feb 1991. v. 11 (1). p. i-iii. (NAL Call No.: DNAL TX336.5.C2T62).

0167

Boll weevil (*Anthonomus grandis*) sterility: effects of different combinations of diflubenzuron, antibiotics, fumigation, and irradiation.

Wright, J.E. AR-SO~APHIS. McCoy, J.R.; Dawson, J.R.; Roberson, J.; Sikorowski, P.P. College Station, Tex., Southwestern Entomological Society. The Southwestern entomologist. June 1980. v. 5 (2). p. 84-89. 10 ref. (NAL Call No.: QL461.S65).

0168

Cherry spray schedule for New Jersey home orchards.

Race, S.R. Springer, J.K. New Brunswick, N.J. : The Service. Leaflet - Cooperative Extension Service, Cook College, Rutgers, The State University of New Jersey. Feb 1979. (516-A). 2 p. (NAL Call No.: DNAL 275.29 N46L).

0169

Citrus fumigation: the California rules will be different (Ethylene dibromide, Medfly).

Los Angeles, California Citrograph Publishing Co. Citrograph. Mar 1981. v. 66 (5). p. 101-102, 110. (NAL Call No.: 80 C125).

0170

Commodity treatments: responses of tomatoes and green bell peppers to fumigation with methyl bromide or ethylene dibromide (Chemical control of Mediterranean fruit fly, *Ceratitis capitata*, storage decay).

Lipton, W.J. Tebbets, J.S.; Spitler, G.H.; Hartsell, P.L. Washington, D.C., The Department. Marketing research report - U.S. Department of Agriculture. June 1982. June 1982. (1125). 8 p. 17 ref. (NAL Call No.: 1 AG84MR).

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0171

Comparative effectiveness of gallery-injected insecticides and fumigants to control carpenterworms (Lepidoptera:Cossidae) and oak clearwing borers (Lepidoptera:Sesiidae).

JEENAI. Solomon, J.D. College Park, Md. : Entomological Society of America. Journal of economic entomology. Apr 1985. v. 78 (2). p. 485-488. Includes references. (NAL Call No.: DNAL 421 J822).

0172

Comparative studies of three soil fumigants for wireworm control by William C. Cook. -.

Cook, William C. (William Carmichael), 1895. Washington, D.C. U.S. Dept. of Agriculture 1949. 22 p. : ill. --. Bibliography: p. 22. (NAL Call No.: Fiche S-69 no.980).

0173

Comparison of three soil fumigants in a barefoot conifer nursery.

TPLNA. Campbell, S.J. Kelpas, B.R. Washington, D.C. : The Service. Tree planters' notes - U.S. Department of Agriculture, Forest Service. Fall 1988. v. 39 (4). p. 16-22. Includes references. (NAL Call No.: DNAL 1.962 C5T71).

0174

Concentrations of 80:20 grain fumigant (CC14-CS2) in (grain elevator)-handling equipment during transfers of fumigated wheat.

Storey, C.L. Martin, C.R.; Sukkestad, D.R. College Park, Md., Entomological Society of America. Journal of economic entomology. Apr 1981. v. 74 (2). p. 188-190. ill. 6 ref. (NAL Call No.: 421 J822).

0175

Control of the strawberry crown borer by methyl bromide fumigation and with poison baits.

KAEBA. Ritcher, P.O. Lexington : The Station. Bulletin - Kentucky, Agricultural Experiment Station. Documents available from: Agriculture Library, Agricultural Science Center - North, University of Kentucky, Lexington, Ky. 40546-0091. Nov 1944. (468). 28 p. ill. Includes references. (NAL Call No.: DNAL 100 K41 (2)).

0176

Disposition and air dispersal of ethylene dibromide from fumigated citrus (from infestation by the Caribbean fruit fly, *Anastrepha suspensa*, Florida).

Miller, W.M. Ismail, M.A.; Craig, J.O. St. Joseph, Mich., The Society. Transactions of the ASAE - American Society of Agricultural

Engineers. July/Aug 1981. v. 24 (4). p. 1050-1053, 1057. ill. 21 ref. (NAL Call No.: 290.9 AM32T).

0177

Dose/response of codling moth (Lepidoptera: Tortricidae) eggs and nondiapausing and diapausing larvae to fumigation with methyl bromide.

JEENAI. Tebbets, J.S. Vail, P.V.; Hartsell, P.L.; Nelson, H.D. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1986. v. 79 (4). p. 1039-1043. Includes references. (NAL Call No.: DNAL 421 J822).

0178

Dynamics of the entomogenous nematode *Steinernema feltiae* applied to soil with and without nematicide treatment.

JONEB. Ishibashi, N. Kondo, E. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Oct 1987. v. 19 (4). p. 404-412. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0179

Effect of low temperatures on three embryonic stages of the codling moth (Lepidoptera: Tortricidae).

JEENAI. Moffitt, H.R. Burditt, A.K. Jr. Lanham, Md. : Entomological Society of America. Based on mortality, the order of tolerance of three embryonic stages of codling moth, *Cydia pomonella* (L.), eggs for temperatures near 0 degrees C was red ring white blackhead. Red ring stage eggs were 1.5 times more tolerant of low temperature than were white stage eggs egg 2.5 times more tolerant than blackhead stage eggs. Thirty-six, to 42 d exposure was required for complete mortality on mature Red Delicious' or Golden Delicious' apples. Tolerance of low temperature was not affected by the apple variety used as the substrate for oviposition. Eggs deposited on a substrate other than apples, such as plastic film, were significantly more susceptible to the effects of low temperature. Exposure to low temperatures such as those commonly used for short- or long-term fruit storage shows promise as an alternative to fumigation as a treatment for codling moth eggs on apples and pears after harvest. Journal of economic entomology. Oct 1989. v. 82 (5). p. 1379-1381. Includes references. (NAL Call No.: DNAL 421 J822).

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0180

Effects of air pollutants on plant-insect interactions: reactions of the Mexican bean beetle (*Epilachna varivestis*) to SO₂ (sulfur dioxide)-fumigated pinto beans (*Phaseolus vulgaris*).

Hughes, P.R. Potter, J.E.; Weinstein, L.H. College Park, Md., Entomological Society of America. Environmental entomology. Oct 15, 1981. v. 10 (5). p. 741-744. 22 ref. (NAL Call No.: QL461.E532).

0181

The effects of EDB fumigation and shanking on adult pecan weevil emergence in native Texas pecans under drought conditions.

SENTD. Cocke, J. Jr. Worthington, W.; Harris, M.K.; Lee, T.A. College Station, Tex. : Southwestern Entomological Society. The Southwestern entomologist. Dec 1984. v. 9 (4). p. 375-381. Includes references. (NAL Call No.: DNAL QL461.S65).

0182

Efficacy of hydrogen cyanide fumigation as a treatment for pests of Hawaiian cut flowers and foliage after harvest.

JEENAI. Hansen, J.D. Hara, A.H.; Chan, H.T. Jr.; Tenbrink, V.L. Lanham, Md. : Entomological Society of America. Efficacy of 30 min fumigations at 2,500, 3,700, and 4,600 ppm of hydrogen cyanide (HCN) was tested in the laboratory as a treatment against representative Hawaiian quarantine pests. Effective results were obtained for nymphs and adults of the banana aphid, *Pentalonia nigronervosa* Coquerel, in red ginger flowers; an armored scale, *Pseudaulacaspis cockerelli* (Cooley), on oleander leaves; the green scale, *Coccus viridis* (Green), on ixora leaves; and nymphs of the coconut mealybug, *Nipaecoccus nipae* (Maskell), on palm. Other species of mealybugs and ants also were susceptible to the treatment, particularly at the highest concentration. Most nymphs and adults of a thrips, *Sciothrips cardamomi* (Ramakrishna), in red ginger flowers survived all concentrations of fumigation. All adults of an orchid weevil, *Orchidophilus aterrimus* (Waterhouse), survived the treatment. The suitability of HCN fumigation is discussed. Journal of economic entomology. Apr 1991. v. 84 (2). p. 532-536. Includes references. (NAL Call No.: DNAL 421 J822).

0183

Enhanced success of Mexican bean beetle (*Coleoptera: Coccinellidae*) on glutathione-enriched soybean leaves.

EVETEX. Hughes, P.R. Chiment, J.J. Lanham, Md. : Entomological Society of America. Artificial augmentation of soybean leaves with reduced glutathione (GSH) elicited all of the same responses from Mexican bean beetle (MBB),

Epilachna varivestis Mulsant, as did fumigation with the air pollutant sulfur dioxide. Larval growth, rate of development, and survivorship as well as adult fecundity and longevity were all significantly greater on excised leaves that had been allowed to imbibe a solution of the tripeptide. In addition, adults showed a strong preference for feeding on the treated leaves over nontreated leaves. Increased fecundity after feeding on treated leaves was a consequence of the earlier and longer period of egg laying rather than a change in the rate of egg production. The effects of GSH treatment were even more distinct than those produced by exposure of plants to the pollutant. These results establish the very close correlation between changes in foliar glutathione and alteration of MBB success on this plant in response to air pollution. Environmental entomology. Oct 1988. v. 17 (5). p. 782-784. Includes references. (NAL Call No.: DNAL QL461.E532).

0184

Evaluation of a methyl bromide quarantine treatment to control codling moth (*Lepidoptera: Tortricidae*) on nectarine cultivars proposed for export to Japan.

JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. Lanham, Md. : Entomological Society of America. Our experiments showed that testing required by regulatory agencies to demonstrate the efficacy of a quarantine treatment using 48 g/m³ methyl bromide for 2 h at 21 degrees C or above and 50% load was unnecessary to control codling moth, *Cydia pomonella* (L.), on every nectarine cultivar proposed for export to Japan. Ovipositional tests for codling moth on nine nectarine cultivars showed no differences in acceptability among cultivars that might cause higher populations in harvested fruit and affect quarantine security levels. Measurements of egg chorion and fruit cuticle showed that codling moth eggs were not affected by different nectarine cultivars and other fruit substrates. No differences that would reduce the efficacy of the methyl bromide quarantine treatment were found in codling moth mortality to methyl bromide fumigation in dose-response tests on different substrates, including nectarine, peach, plum, and apple cultivars and waxed paper. A confirmatory test resulted in 100% mortality of 27,174 1-d-old codling moth eggs. The true survival proportion based on all confirmatory tests was less than or equal to 20 per 1 million at the 95% CL. A concentration X time product of (average +/- SD) 68.0 +/- 3.0 g.h/m³ methyl bromide was considered a useful measurement to help maintain treatment security for control of codling moth on all nectarine cultivars. Journal of economic entomology. Apr 1990. v. 83 (2). p. 466-471. Includes references. (NAL Call No.: DNAL 421 J822).

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0185

Evaluation of some nonhalogenated compounds as fumigants against larvae of a Caribbean fruit fly (*Anastrepha suspensa*).

Carroll, J.F. Morgan, N.O.; Weber, J.D. College Park, Md., Entomological Society of America. Journal of economic entomology. Feb 1982. v. 75 (1). p. 137-140. 3 ref. (NAL Call No.: 421 J822).

0186

Field competitiveness of boll weevils (*Coleoptera: curculionidae*) sterilized by the feeding of chemosterilants followed by irradiation or fumigation (*Anthonomus grandis*). Villavaso, E.J. Thompson, J.M. College Park, Md.: Entomological Society of America. Journal of economic entomology. June 1984. v. 77 (3). p. 583-587. Includes references. (NAL Call No.: 421 J822).

0187

Forest spraying pesticide applicator's training manual /prepared by extension specialists at the University of Minnesota.

St. Paul, Minn.: Minnesota Extension Service, University of Minnesota, 1987. Abstract: This guide for the Minnesota commercial agricultural pesticide applicator is prepared as a training aid for those applicators who wish to become certified to apply or supervise the application of "restricted-use" pesticides in Minnesota forests. The principles of forest pest management, the identification and control of insect, weed, disease and vertebrate pests, application equipment, calibration techniques, pesticide formulation, fumigation principles and other treatment methods are discussed. The toxicity of pesticides and their potential danger to humans, environmental hazards, safety precautions, label information, protective clothing, storage, and disposal are covered. A bibliography, questions and answers, and a glossary complete this manual. Cover title. ~ "9/87." ~ "G4418." vi, 268 p.: ill.; 28 cm. Includes bibliographical references (p. 195). (NAL Call No.: DNAL SB952.863.M6F6).

0188

Fumigant action of various insecticides on the egg and first larval stage of *Heliothis zea*.

Horowitz, A.R. Toscano, N.C. Clemson, S.C.: South Carolina Entomological Society. Journal of agricultural entomology. Jan 1988. v. 5 (1). p. 5-10. Includes references. (NAL Call No.: DNAL SB599.J69).

0189

Fumigant development for killing insects on lettuce and other produce /Ruth Lynn Hooper ... et al. --.

Hooper, Ruth Lynn. Natick, Mass.: US Army Natick Research and Development Center, 1984. Final technical report 1 Oct. 80 - 30 Sept. 83. ~ Contract No. D83-13. ~ Report No. NATICK/TR-84/046; AD A146661. v. 8 leaves; 28 cm. Bibliography: leaf 6. (NAL Call No.: DNAL SB981.F8).

0190

Fumigants as treatments for harvested citrus fruits infested with *Asynonychus godmani* (*Coleoptera: Curculionidae*).

JEENAI. Soderstrom, E.L. Brandl, D.G.; Hartsell, P.L.; Mackey, B. Lanham, Md.: Entomological Society of America. Ethyl formate, hydrogen cyanide, phosphine, and methyl bromide fumigants were tested for their efficacy for postharvest control of eggs of Fuller rose beetle, *Asynonychus godmani* Crotch, on lemons. Fuller rose beetle is a quarantine pest of citrus fruits entering Japan. Only methyl bromide use appears to be feasible for fumigating citrus fruits infested with beetle eggs. Fumigation of infested, unprocessed lemons at a 50% load factor for 2 h at 21 degrees C with 44 g/m³ of methyl bromide resulted in a concentration X exposure time (CT) product of 75.6 g.h/m³, with mortality to eggs of 99.94%. Inorganic methyl bromide residue in lemon fruit pulp and peel averaged 5.0 and 12.2 ppm, respectively. Supplementing methyl bromide fumigation with 20% carbon dioxide did not improve insect mortality. Cold storage and shipping temperatures (normally used in handling citrus fruits destined for Japan) combined with methyl bromide fumigation also did not improve efficacy. Journal of economic entomology. June 1991. v. 84 (3). p. 936-941. Includes references. (NAL Call No.: DNAL 421 J822).

0191

Fumigation for insect control (Lettuce, California lettuce, export to Japan).

Nelson, H.D. Hartsell, P.L. Sacramento, The Board. Iceberg Lettuce Research Program annual report. 1980. 1980. (6th). p. 109-111. 4 ref. (NAL Call No.: SB351.L6I25).

0192

Fumigation of avocado fruit with methyl bromide (for fruit fly, *Dacus dorsalis*, *Dacus cucurbitae*, and *Ceratitidis capitata*).

Ito, P.J. Hamilton, R.A. Alexandria, Va., American Society for Horticultural Science. HortScience. Oct 1980. v. 15 (5). p. 593. 4 ref. (NAL Call No.: SB1.H6).

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0193

Fumigation of Caribbean fruit fly (Diptera: Tephritidae) larvae with cyclopropyl compounds inhibits adult emergence (Anastrepha suspensa).
Carroll, J.F. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1984. v. 77 (4). p. 980-983. Includes 11 references. (NAL Call No.: 421 J822).

0194

Fumigation of Western flower thrips using banana bags (polyethylene-D) during simulated shipment of cut flowers.
Tjosvold, S.A. Ali, A.D. Berkeley, Calif. : The Service. Flower and nursery report for commercial growers - California University, Berkeley, Agricultural Extension Service. Summer 1989. p. 3-4. Includes references. (NAL Call No.: DNAL SB1.A1F5).

0195

Fumigation with methyl bromide to kill larvae and eggs of the codling moth in Lambert cherries (Varieties).
Guance, A.P. Madsen, H.F.; McMullen, R.D. College Park, Md., Entomological Society of America. Journal of economic entomology. Apr 1981. v. 74 (2). p. 154-157. ill. 6 ref. (NAL Call No.: 421 J822).

0196

Gamma radiation as a quarantine treatment for Fuller rose beetle eggs (Coleoptera: Curculionidae) on citrus fruit.
JEENAI. Johnson, J.A. Soderstrom, E.L.; Brandl, D.G.; Houck, L.G.; Wofford, P.L. Lanham, Md. : Entomological Society of America. Since 1985 when eggs of the Fuller rose beetle, *Pantomorus cervinus* (Boheman), were found by Japanese fruit inspectors under the calyxes of California citrus, researchers have sought to develop alternatives to methyl bromide fumigation as a suitable quarantine treatment for this pest. Three different ages of Fuller rose beetle eggs laid on waxed paper were exposed to gamma radiation doses of 10, 50, 100, and 150 Gy. The oldest age class (10-13 d old) was the least susceptible. Egg hatch of the two younger age classes (1-3 and 6-8 d old) was prevented by 50 Gy, whereas 150 Gy was needed to prevent hatch of older eggs. To confirm the efficacy of the method, lemons infested with 10- to 13-d-old Fuller rose beetle eggs were placed in the center of standard cardboard lemon cartons and irradiated at doses averaging 174.1 Gy. Egg hatch from egg clusters infesting untreated lemons averaged (mean +/- SEM) 42.5% +/- 4.66 per lemon. None of the estimated 6,500 eggs infesting irradiated lemons hatched. Damage of irradiated fruit varied but did not exceed a 6.1% increase compared with damage found in controls. These data show that irradiation of lemons could be

an effective quarantine treatment against Fuller rose beetle eggs. Journal of economic entomology. June 1990. v. 83 (3). p. 905-909. Includes references. (NAL Call No.: DNAL 421 J822).

0197

Grain fumigation : a multifaceted issue needing coordinated attention : report to the Interagency Regulatory Liaison Group / by the U.S. General Accounting Office. - .
United States ~ General Accounting Office. (Washington, D.C.) U.S. General Accounting Office ; for sale by Supt. of Docs. 1981. Cover title ~September 10, 1981 ~CED-81-152 ~B-204571--prelim. p. 2, iii, 17 p. ; 28 cm. (NAL Call No.: SB955.U5).

0198

Grain fumigation: pesticide bans limit options.
CACBA. Johnson, L.A. Minneapolis, Minn. : Cargill, Inc. Cargill bulletin. Mar 1986. p. 4-5. (NAL Call No.: DNAL 281.8 C19).

0199

Home fruit orchard sprays.
Jones, B.F. McDaniel, M.C. Little Rock, Ark. : The Service. Leaflet EL - Arkansas University, Cooperative Extension Service. Apr 1987. (351,rev.). 7 p. ill. (NAL Call No.: DNAL 275.29 AR4LE).

0200

Home fruit orchard sprays (Fumigation, insect pest control).
Jones, B.F. Mason, C.L.; McDaniel, M.C. Little Rock, Ark., The Service. EL - Cooperative Extension Service, University of Arkansas. Aug 1980. Aug 1980. (351). 8 p. ill. (NAL Call No.: 275.29 AR4LE).

0201

Infestation: changes in rules, procedures debated.
CACBA. Johnson, L.A. Minneapolis, Minn. : Cargill, Inc. Cargill bulletin. May 1986. p. 4-5. (NAL Call No.: DNAL 281.8 C19).

0202

An innovative thermo-fumigation technique for control of red imported fire ants (Hymenoptera: Formicidae).
Thorvilson, H.G. Phillips, S.A. Jr.; Sorensen, A.A. Clemson, S.C. : South Carolina Entomological Society. Journal of agricultural entomology. Jan 1989. v. 6 (1). p. 31-36. ill.

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Includes references. (NAL Call No.: DNAL SB599.J69).

0203

Institutional, industrial, structural, health-related pest control / Mary L. Grodner, Jack L. Bagent .
Grodner, Mary L. Bagent, Jack L. Baton Rouge? : Louisiana Cooperative Extension Service, Louisiana State University Agricultural Center, 1985? . This Louisiana state publication is a training manual for pesticide applicators who seek certification in industrial, institutional, structural and health-related pest control. Regulatory requirements, sanitation and fumigation are discussed. Labels and labeling warnings and information are explained. Protective clothing advice and environmental safety tips are included. A detailed chart cross-references the effects of pesticide chemicals on the human body. Insect pests are described and illustrated. Cover title.~ "7/85"--P. 2 of cover. 66 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB951.G77).

0204

Laboratory comparisons of sulfuryl fluoride toxicity and mean time of mortality among ten termite species (Isoptera: Hodotermitidae, Kalotermitidae, Rhinotermitidae).
JEENAI. Osbrink, W.L.A. Scheffrahn, R.H.; Su, N.Y.; Rust, M.K. College Park, Md. : Entomological Society of America. Journal of economic entomology. Oct 1987. v. 80 (5). p. 1044-1047. Includes references. (NAL Call No.: DNAL 421 J822).

0205

Large chamber fumigations with methyl bromide to destroy Caribbean fruit fly in grapefruit.
Benschoter, C.A. King, J.R.; Witherell, P.C. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. June 1985. v. 97. p. 123-125. ill. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0206

Lethality of ozone for the biting gnat, Culicoides variipennis: fumigation of a biological safety cabinet for arbovirus research (Main vector of bluetongue virus, USA).
Akey, D.H. College Park, Md., Entomological Society of America. Journal of economic entomology. Apr 1982. v. 75 (2). p. 387-392. ill. 2 p. ref. (NAL Call No.: 421 J822).

0207

Low dose ethylene dibromide fumigation for quarantine control of Caribbean fruit fly in grapefruit.
Von Windeguth, D.L. King, J.R.; Chew, V. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. June 1985. v. 97. p. 120-122. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

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Metham-sodium for control of wireworm larvae.
Toba, H.H. Clemson, S.C. : South Carolina Entomological Society. Journal of agricultural entomology. Oct 1984. v. 1 (4). p. 392-396. Includes references. (NAL Call No.: DNAL SB599.J69).

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Methyl bromide fumigation and cold storage as treatments for California stone fruits and pears infested with the Caribbean fruit fly (Diptera: Tephritidae).
JEENAI. Benschoter, C.A. Lanham, Md. : Entomological Society of America. Journal of economic entomology. Dec 1988. v. 81 (6). p. 1665-1667. Includes references. (NAL Call No.: DNAL 421 J822).

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Methyl bromide fumigation as a quarantine treatment for latania scale, Hemiberlesia lataniae (Homoptera: Diaspididae) (Nursery stock, avocado fruit).
Witherell, P.C. Gainesville, Fla. : Florida Entomological Society. Florida entomologist. June 1984. v. 67 (2). p. 254-262. Includes references. (NAL Call No.: 420 F662).

0211

Methyl bromide fumigation destroys broods of the smaller European elm bark beetle (Coleoptera: Scolytidae) in elm logs (Scolytus multistriatus, Georgia).
Hanula, J.L. Berisford, C.W. College Park, Entomological Society of America. Journal of economic entomology. Aug 1982. v. 75 (4). p. 688-690. 6 ref. (NAL Call No.: 421 J822).

0212

Methyl bromide fumigation for control of oriental fruit fly (Diptera: Tephritidae) in California stone fruits.
JEENAI. Armstrong, J.W. Harvey, J.M.; Garcia, D.L.; Menezes, T.D.; Brown, S.A. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1988. v. 81 (4). p. 1120-1123. Includes references. (NAL Call No.: 421 J822).

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0213

Methyl bromide fumigation of tree fruits for control of the mediterranean fruit fly: concentrations, sorption, and residues (*Ceratitis capitata*).

Tebbetts, J.S.JAFCA. Hartsell, P.L.; Nelson, H.D.; Tebbets, J.C. Washington : American Chemical Society. Journal of agricultural and food chemistry. Mar/Apr 1983. v. 31 (2). p. 247-249. Includes references. (NAL Call No.: 381 J8223).

0214

Methyl bromide fumigation to control the oriental fruit moth (*Lepidoptera: Tortricidae*) in nectarines.

JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. Lanham, Md. : Entomological Society of America. Responses of 24-h-old eggs and first through fifth instars of the oriental fruit moth (OFM), *Grapholita molesta* (Busck), in artificially infested nectarines, *Prunus persica* (L.) Batsch var. *nucipersica* Schneid, to methyl bromide (MB) fumigation for 2 h at 21 degree C is reported. Eggs were least susceptible and first instars were most susceptible when LC50's and concentrations to cause 100% mortality were compared. A MB dose of 30 g/m³ resulted in 100% egg mortality. A currently used MB quarantine fumigation schedule of 32 g/m³ for 2 h at 16-26 degree C was determined to be efficacious against OFM in nectarines for export to British Columbia. Journal of economic entomology. Dec 1987. v. 80 (6). p. 1226-1228. Includes references. (NAL Call No.: DNAL 421 J822).

0215

Methyl bromide quarantine fumigations for Hawaii-grown Cucumbers infested with melon fly and oriental fruit fly (*Diptera: tephritidae*).

JEENAI. Armstrong, J.W. Garcia, D.L. College Park, Md. : Entomological Society of America. Journal of economic entomology. Dec 1985. v. 78 (6). p. 1308-1310. Includes references. (NAL Call No.: DNAL 421 J822).

0216

Methyl bromide quarantine treatment for codling moth (*Lepidoptera: Tortricidae*) in unshelled walnuts.

JEENAI. Hartsell, P.L. Vail, P.V.; Tebbets, J.S.; Nelson, H.D. Lanham, Md. : Entomological Society of America. Unshelled walnuts were artificially infested with diapausing fifth-instar codling moth, *Cydia pomonella* (L.), and fumigated with 56 g/m³ methyl bromide for 4 h at 15.6 degrees C under a reduced pressure of 100 mm Hg. When 34,959 were treated, 1 larva survived, indicating

a-survival rate of 2.91 larvae/100,000 treated. The upper 95% CL for this survival rate was 13.8 larvae/100,000 treated. When larval survival rates of methyl bromide fumigation tests of a normally applied domestic treatment were combined with survival rates from quarantine vacuum fumigation tests, the 95% CL survival rates were less than or equal to 0.4 larva/100,000 treated. No significant differences were found in mortality of larvae among the four walnut cultivars tested, nor was variation in the size of walnuts of each cultivar a significant factor. Because whole walnuts sorbed 79.6% of the methyl bromide applied, a relatively high rate of methyl bromide was required to obtain an efficacious treatment. The treatment was accepted by the Japanese Ministry of Agriculture, Forestry and Fisheries in 1986. Journal of economic entomology. Aug 1991. v. 84 (4). p. 1289-1293. Includes references. (NAL Call No.: DNAL 421 J822).

0217

A methyl bromide quarantine treatment to control codling moth (*Lepidoptera: Tortricidae*) on nectarines packed in shipping containers for export to Japan and effect on fruit attributes.

JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. Lanham, Md. : Entomological Society of America. Codling moth, *Cydia pomonella* (L.), eggs (n = 25,594) on 'Royal Giant' nectarines, *Prunus* sp., packed in styrene cup trays in Bliss-style, single wall, corrugated fiberboard shipping containers (one cup tray per container) did not survive a fumigation quarantine treatment (48 g/m³ methyl bromide, 2 h at greater than or equal to 21 degrees C, 50% load) currently used to treat nectarines in field bins for export to Japan. Fumigation of nectarines in shipping containers did not affect fruit weight loss, soluble solids or titratable acidity after 5 wk in storage (0-1 degrees C). Total carotenoid content was significantly lower in fumigated fruit than unfumigated control fruit after 1, 2, 3, and 5 wk of storage. Preconditioning (17 h at 21 degrees C) cooled fruit (approximately 2 degrees C) before fumigation and storage (1 wk at 0-1 degrees C) resulted in a significantly lower carotenoid content than untreated fruit, which may be related to delayed ripening that would extend shelf life. We propose that fumigation of nectarines in shipping containers is a practical and efficacious method to disinfest nectarines of potential codling moth infestations for export to Japan. Journal of economic entomology. Dec 1990. v. 83 (6). p. 2335-2339. ill. Includes references. (NAL Call No.: DNAL 421 J822).

0218

Methyl bromide residues and desorption rates from unshelled walnuts fumigated with a quarantine treatment for codling moth (*Lepidoptera: Tortricidae*).

JEENAI. Hartsell, P.L. Tebbets, J.C.; Vail, P.V. Lanham, Md. : Entomological Society of

America. California walnuts were fumigated unshelled with a quarantine treatment to control codling moth, *Cydia pomonella* (L.). The treatment was done with 56 g/m³ methyl bromide for 4 h at 15.6 degrees C and a chamber pressure of 100 mm Hg. There were no significant differences in organic or inorganic bromide residues regardless of walnut cultivar or size. Inorganic residues were below the established tolerance level of 200 ppm. The 'Eureka' cultivar, although not significantly different in its desorption rate of residual methyl bromide, had higher organic residues than the other cultivars tested. Residue levels in treated nut meats showed no significant change in inorganic bromide content over a 25-d period. Accumulated inorganic bromide residues in nut meats fumigated once or twice with a domestic methyl bromide schedule (56 g/m³ for 24 h at 15.6 degrees C) to control field infestation and stored-product insects followed by fumigation with the quarantine treatment did not exceed the established tolerance level. Residual methyl bromide in treated nut meats stored unshelled at 1.7 or 10 degrees C was less than or equal to 10 ppb after 70 or 53 d, respectively, whereas those stored at 21 or 32 degrees C had less than or equal to 10 ppb after 20 or 14 d, respectively. *Journal of economic entomology*. Aug 1991. v. 84 (4). p. 1294-1297. Includes references. (NAL Call No.: DNAL 421 J822).

0219

Methylation of DNA of maize and wheat grains during fumigation with methyl bromide.
JAFCAU. Starratt, A.N. Bond, E.J. Washington, D.C. : American Chemical Society. *Journal of agricultural and food chemistry*. Sept/Oct 1988. v. 36 (5). p. 1035-1039. Includes references. (NAL Call No.: DNAL 381 J8223).

0220

A new look at soil insecticides and fumigants for the (chemical) control of the pecan weevil (*Curculio caryae*).
Neel, W.W. Graves, C.H.; Coats, R.E. Atlanta, Ga., Publications South. Pecan South. Apr 1981. v. 8 (3). p. 18-22. ill. 9 ref. (NAL Call No.: SB401.P4P4).

0221

A new look at soil insecticides and fumigants for the control of the pecan weevil (*Curculio caryae*, Smite, Lorshan, Sevin, *Carya illinoensis*).
Neel, W.W. Graves, C.H.; Coats, R.E. Starkville, Miss., The Association. *Proceedings ... annual convention - Southeastern Pecan Growers Association*. 1981. 1981. 74th). p. 159-168. ill. 8 ref. (NAL Call No.: 94.69 G29).

0222

Pathological alterations in embryos of the codling moth (Lepidoptera: Tortricidae) induced by methyl bromide.
AESAAI. Cheetham, T. Lanham, Md. : The Society. *Annals of the Entomological Society of America*. Jan 1990. v. 83 (1). p. 59-67. ill. Includes references. (NAL Call No.: DNAL 420 EN82).

0223

Phytotoxic responses of cherries, nectarines, peaches, pears, and plums fumigated with methyl bromide for control of Mediterranean fruit fly (*Ceratitidis capitata*, quarantine).
Harvey, J.M. JOSHB. Harris, C.M. Alexandria : The Society. *Journal of the American Society for Horticultural Science*. Nov 1982. v. 107 (6). p. 993-996. 5 ref. (NAL Call No.: 81 S012).

0224

Rearing, large-scale tests, and egg response to confirm efficacy of a methyl bromide quarantine treatment for codling moth (Lepidoptera: Tortricidae) on exported nectarines.
JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. College Park, Md. : Entomological Society of America. *Methods to rear codling moth (CM), *Cydia pomonella* (L.), adults to produce mass numbers of eggs to coincide with the seasonal maturation of nectarines *Prunus persica* (L.) Batsch var. *nucipersica* Schneid., are described. Large-scale confirmatory tests of a methyl bromide (MB) quarantine treatment of 48 g/m³ MB for 2 h at 21°C developed to control CM on exported nectarines were done in four tests on 1-d-old eggs on 'May Grand' and 'Firebrite' nectarines. No eggs (n = 93,744) survived the MB fumigation, and percentage hatch in the untreated controls (n = 7,180) was 78.2 +/- 8.7 (-/x +/- SEM). Security of the quarantine treatment calculated as the true survival proportion was less than or equal to 32 per million at the 95% confidence level. The concentration times time (CT) products equaled 66.4 +/- 1.1 g. h/m³. The embryo and yolk of eggs treated with MB showed abnormal development and evidence of severe damage within 24 h after exposure. Approximately 18.8-41.4% of treated CM eggs on nectarines held at 23°C developed yellow or yellow-orange pigmentation 9-16 d after fumigation. Approximately 1.35 +/- 3.6% of the embryos continued development 15-16 d after MB fumigation and showed head capsule sclerotization, but embryogenesis was incomplete. *Journal of economic entomology*. Oct 1988. v. 81 (5). p. 1437-1442. Includes references. (NAL Call No.: DNAL 421 J822).*

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Scutigerella immaculata (Newport), the symphylid in pineapple fields of Puerto Rico.
JAUPA. Cotte, D. Rio Piedras, R.R. : University of Puerto Rico, Agricultural Experiment Station. The Journal of agriculture of the University of Puerto Rico. July 1989. v. 73 (3). p. 275-276. Includes references. (NAL Call No.: DNAL 8 P832J).

0226

Soil fumigation and treatment to control soil-borne diseases and nematodes in home gardens.
Barnes, G.L. Conway, K.E.; Russell, C.C.; Pratt, P.W. Stillwater, Dkla. : The Service. OSU extension facts - Cooperative Extension Service, Dklahoma State University. Aug 1984. (7614,rev.). 4 p. (NAL Call No.: DNAL S544.3.D5D5).

0227

Space fumigation tests against selected greenhouse pests, 1978 (Coleus, lima beans, tomatoes).
Webb, R.E. AR~AR-BARC. Pilitt, D.R.; Neal, J.W. Jr.; Cawley, B.M. Jr. Reprints. United States. Dept. of Agriculture. Science and Education Administration. Agricultural Research. (NAL Call No.: aS21.A8U5/AR).

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Space fumigation tests against selected greenhouse pests, 1979.
Neal, J.W. Jr. Pilitt, D.R.; Webb, R.E.; Cawley, B.M. Jr. College Park : Entomological Society of America. Insecticide and acaricide tests. 1980. v. 5. p. 169. (NAL Call No.: SB950.A1I49).

0229

Sterilizing effects of tepa-vapor on Dysdercus koenigii fumigated as nymphs.
Sehgal, S.S. Maheshwari, S.C.; Chaudhary, K.D. College Park, Md., Entomological Society of America. Journal of economic entomology. June 1980. v. 73 (3). p. 374-377. ill. 17 ref. (NAL Call No.: 421 J822).

0230

Symptoms of acetaldehyde injury on head lettuce (Fumigation, Myzus persicae).
Stewart, J.K. AR-W. Aharoni, Y.; Hartsell, P.L.; Young, D.K. Alexandria, Va., American Society for Horticultural Science. HortScience. Apr 1980. v. 15 (2). p. 148-149. ill. 3 ref. (NAL Call No.: SB1.H6).

0231

Temperature control as an alternative to ethylene dibromide fumigation for the control of fruit flies (Diptera: Tephritidae) in papaya (Dacus dorsalis).
Hayes, C.F. Chingon, T.G.; Nitta, F.A.; Wang, W.J. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1984. v. 77 (3). p. 683-686. Includes references. (NAL Call No.: 421 J822).

0232

Thrips mortality and strawberry quality after vacuum fumigation with acetaldehyde or ethyl formate (Frankliniella occidentalis).
Aharoni, Y. Stewart, J.K.; Guadagni, D.G.; Mon, T.R. Alexandria, Va., The Society. Journal of the American Society for Horticultural Science. Nov 1980. v. 105 (6). p. 926-929. 13 ref. (NAL Call No.: 81 SD12).

0233

USDA orders fumigation of citrus leaving Rio Grande Valley (Mexican fruit fly, Texas, control).
Washington, D.C., The Dffice. Major news releases and speeches - United States Department of Agriculture, Dffice of Governmental and Public Affairs. Jan 15/29, 1982. Jan 15/29, 1982. p. 30. (NAL Call No.: aS21.A8U51).

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0234

Alternatives to EDB (ethylene dibromide) for nematode control in 1984 (Non-fumigant nematicides for use in peanut fields).
Cobb, L.C. Tifton, Ga. : Georgia Agricultural Commodity Commission for Peanuts. Southeast peanut farmer. Mar 1984. v. 22 (3). p. 9. (NAL Call No.: HD9235.P32S6).

0235

Basamid and solar heating effective for control of plant-parasitic nematodes at Bessey Nursery, Nebraska.

Hildebrand, D.M. Dinkel, G.B. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a meeting of the Western Forest Nursery Associations, Aug 8-11, 1988, Vernon, British Columbia. Dec 1988. (167). p. 139-144. Includes references. (NAL Call No.: DNAL aSD11.A42).

0236

Chemical control of *Hoplolaimus columbus* on cotton and soybean.

JONEB. Schmitt, D.P. Bailey, J.E. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 689-694. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0237

Chemical fumigation of soil to control soil-borne diseases and nematodes in home gardens.

Pickett, L.S. Russell, C.C. Stillwater, Okla. : The Service. OSU extension facts - Cooperative Extension Service, Oklahoma State University. Jan 1990. (7614,rev.). 4 p. Includes references. (NAL Call No.: DNAL S544.3.0505).

0238

Classical nematode management practices.

Heald, C.M. Hyattsville, Md. : Society of Nematologists, 1987. Vistas on nematology : a commemoration of the twenty-fifth anniversary of the Society of Nematologists / edited by Joseph A. Veech and Donald W. Dickson. Literature review. p. 100-104. Includes references. (NAL Call No.: DNAL QL391.N4V57).

0239

Comparative control of soilborne pests on tomato and pepper by soil fumigation.

McSorley, R. McMillan, R.T.; Parrado, J.L. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986 (pub. 1987). v. 99. p. 350-353. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0240

Comparison of fumigant and nonfumigant nematicides for control of *Meloidogyne chitwoodi* on potato.

JONEB. Griffin, G.D. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Oct 1989. v. 21 (4,suppl.). p. 640-644. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0241

Comparison of methyl bromide and other nematicides for control of nematodes in peanut.

AANEEF. Rodriguez-Kabana, R. Robertson, D.G.; King, P.S. Lawrence, Kan. : Society of Nematologists. Annals of applied nematology. Oct 1987. v. 1. p. 56-58. Includes references. (NAL Call No.: DNAL SB998.N4A5).

0242

Comparison of soil fumigant with Ethoprop for reniform nematode control in sweetpotato, 1982 (*Rotylenchus reniformis*, *Ipomoea batatas*).

Clark, C.A.FNETD. Strand, C.; Watson, B. (s.l.) : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1983. v. 38. p. 12-13. (NAL Call No.: 464.9 AM31R).

0243

Continuous cropping under subtropical conditions as affected by methy

bromide-chloropicrin: nematode associations.

Overman, A.U. Mislevy, P. S.l. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1984. v. 43. p. 200-204. Includes 20 references. (NAL Call No.: DNAL 56.9 S032).

0244

Control of *Heterodera carotae*, *Ditylenchus dipsaci*, and *Meloidogyne javanica* with fumigant and nonfumigant nematicides.

JONEB. Greco, N. Elia, F.; Brandonisio, A. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1986. v. 18 (3). p. 359-364. Includes 15 references. (NAL Call No.: DNAL QL391.N4J62).

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0245

Control of Meloidogyne chitwoodi in commercially grown Russet Burbank potatoes.
PLDRA. Pinkerton, J.N. Santo, G.S.; Ponti, R.P.; Wilson, J.I. St. Paul, Minn. : American Phytopathological Society. Plant disease. Sept 1986. v. 70 (9). p. 860-863. Includes 16 references. (NAL Call No.: DNAL 1.9 P69P).

0246

Control of Meloidogyne chitwoodi on potato with soil fumigants alone and in combination with nonfumigants, 1983.
FNETD. Santo, G.S. Ponti, R.P.; Wilson, J.H. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 107. (NAL Call No.: DNAL 464.9 AM31R).

0247

Control of nematodes and soil-borne diseases in Florida potatoes with aldicarb and 1,3-D.
JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 775-778. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0248

Control of nematodes on snap bean with soil fumigants, 1982 (Rotylenchulus reniformis, Helicolytenchus dihystra, Quinisculus acutus, Phaseolus vulgaris).
McSorley, R.FNETD. Parrado, J.L. (s.l.) : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1983. v. 38. p. 1. (NAL Call No.: 464.9 AM31R).

0249

Control of plant parasitic nematodes on established tree and vine crops with Telone II soil fumigant (Grapes, oranges, peaches).
Youngson, C.R. Turner, G.O.; O'Melia, F.C. Midland, Mich., Agricultural Products Dept., Dow Chemical Co. Down to earth. Sept 1981. v. 37 (3). p. 6-10. ill. Includes 8 ref. (NAL Call No.: 381 D75).

0250

Control of plant parasitic nematodes on established tree and vine crops with Telone II soil fumigant (Oranges, peaches, grapes).
Youngson, C.R. Turner, G.O.; O'Melia, F.C. Midland, Mich., Agricultural Products Dept., Dow Chemical Co. Down to earth. 1980. v. 3 (4). p. 6-10. ill. 8 ref. (NAL Call No.: 381 D75).

0251

Control of root knot nematode of potatoes by soil fumigation /C.E. Dallimore.
Dallimore, C. E. Moscow, Idaho : University of Idaho, College of Agriculture, 1962. 1 folded sheet (5 p.) ; 23 cm. (NAL Call No.: DNAL 100 ID14 no.380).

0252

Control of root-knot nematodes on carrots with non-fumigant nematicides, 1979 (Carrot (Dauca carota 'Danvers 126'), northern root-knot nematode; Meloidogyne hapla).
Riedel, R.M. Cole, R.C. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1980. v. 35. p. 218. (NAL Call No.: 464.9 AM31R).

0253

Control of root-knot nematodes on potato with soil fumigants, 1982.
FNETD. Santo, G.S. Ponti, R.P.; Wilson, J.H. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 105. (NAL Call No.: DNAL 464.9 AM31R).

0254

Control of the black shank-root-knot complex on tobacco with fumigant nematicides and Ridomil, 1982 (Phytophthora parasitica f. nicotianae, with the root-knot nematode on Nicotiana tabacum).
Fortnum, B.A.FNETD. Currin, R.E. (s.l.) : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1983. v. 38. p. 13. (NAL Call No.: 464.9 AM31R).

0255

Control of the soybean cyst nematode by crop rotation in combination with a nematicide.
JONEB. Sasser, J.N. Uzzell, G. Jr. Lake Alfred, Fla. : Society of Nematologists. An experiment to evaluate the control of soybean cyst nematodes compared 1 year, 2-year, and 3-year nonhost rotations with continuous soybeans (Glycine max) in 0.2-ha plots. In a second 1-year rotation, the plots were planted to soybean or corn (Zea mays) after fumigation in the spring with a split application of 1,3-dichloropropene (748.2 liters/ha). The effects of the nematicide were apparent the first year. Soybean yield was 1,482 kg/ha compared to 233 kg/ha in the untreated plots. In the second year, the highest yielding plants (2,035 kg/ha) were those following 1 year of corn that had been treated the previous year: plants in untreated plots yielded 288 kg/ha. Average yield of soybean following 1 year of corn was 957 kg/ha compared to 288 kg/ha for

continuous soybean. In the third year, the effects of the nematicide were still evident. Soybean plants in plots treated the first year followed by corn, then soybean, yielded 1,044 kg/ha compared to 761 kg/ha for soybean following 1 year of corn and 991 kg/ha for soybean following 2 years of corn. Plots planted to soybean for 3 consecutive years yielded 337 kg/ha. Nematicidal effects were no longer evident during the fourth year. Yields were most improved by the greatest number of years in the nonhost crop: highest yields in descending order were from plants following 3 years of corn, 2 years of corn, and 1 year of corn. Plots planted to soybean for 4 consecutive years yielded 130 kg/ha. Highly significant negative correlations occurred each year between initial nematode population densities and seed yield. *Journal of nematology*. July 1991. v. 23 (3). p. 344-347. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0256

Controlling apple replant disease in 'McIntosh' apple trees on various rootstocks.

HJHSA. Costante, J.F. Autio, W.R.; Berkett, L.P. Alexandria, Va. : American Society for Horticultural Science. *HortScience*. May 1991. v. 26 (5). p. 604. Includes references. (NAL Call No.: DNAL SB1.H6).

0257

Correlations of *Rotylenchulus reniformis* population densities with 1,3-dichloropropene dosage rate and pineapple yields.

JONEB. Schenck, S. Lake Alfred, Fla. : Society of Nematologists. *Journal of nematology*. Supplement to the *Journal of Nematology* (Annals of Applied Nematology). Oct 1990. v. 22 (45). p. 735-739. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0258

Cost-effectiveness of nematode control by fumigation SMDC on jRockdale soils.

McSorley, R. Pohronezny, K. S.I. : The Society. *Proceedings - Soil and Crop Science Society of Florida*. 1984. v. 43. p. 188-192. Includes 20 references. (NAL Call No.: DNAL 56.9 S032).

0259

Dynamics of the entomogenous nematode *Steinernema feltiae* applied to soil with and without nematicide treatment.

JONEB. Ishibashi, N. Kondo, E. Raleigh, N.C. : Society of Nematologists. *Journal of nematology*. Oct 1987. v. 19 (4). p. 404-412. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0260

Economic assessment of the Michigan tart cherry industry in relation to the soil fumigant EDB (ethylene dibromide).

Klonsky, K. Bird, G.W. East Lansing, The Department. Extract: Cherry orchard sites that have produced profitable yields frequently do not support adequate tree growth when replanted. In Michigan, many cherry orchard replant problems are caused by root-lesion (*Pratylenchus penetrans*) and dagger (*Xiphinema americanum*) nematodes. When high population densities of these species are present, Michigan growers are advised to fumigate the soil the fall before replanting an old orchard site. The soil fumigant most commonly used by Michigan cherry growers until 1978 was ethylene dibromide (EDB). The objectives of this study are to assess the impact of EDB on Michigan tart cherry production during the past 10 years, and estimate the potential impact of the loss of EDB for use in Michigan cherry production in the future. An econometrics approach is used to evaluate the influence of various production systems inputs on the supply and demand for tart cherries. *Agricultural economics report - Michigan State University*, Department of Agricultural Economics. Sept 1981. Sept 1981. (401). 132 p. 22 ref. (NAL Call No.: 281.9 M5842).

0261

Economic impact of registration of ethylene dibromide (EDB) for use on soybeans.

Schmidt, K.M. Swanson, E.R. Urbana, Ill., The Department. Extract: Estimates of the economic impact of federal registration of EDB for use as a nematicide on soybeans were developed for two scenarios. Scenario I assumes that EDB is limited to soybean acreage presently treated with other fumigant nematicides. This limit was removed in Scenario II to allow EDB to be substituted for both fumigants and systemic nematicides. The total welfare impact in terms of changes in producers' rents plus consumers' surplus was estimated with a simulation model (AGSIM). These impacts were measured by the present value of an infinite series of future changes resulting from the registration of EDB. Estimated present value of the total welfare gains from the Section 24(c) exemptions is about 700 million dollars with approximately an additional one percent gain from a nation-wide registration. *Illinois agricultural economics staff paper*, series E agricultural economics - Dept. of Agricultural Economics, University of Illinois. Apr 1981. Apr 1981. (82 E-218). 87 p. Bibliography p. 69-87. (NAL Call No.: 916937(AGE)).

0262

Effect of *Meloidogyne hapla*, alone and in combination with subthreshold populations of *Verticillium dahliae*, on disease symptomology and yield of potato.

PHYTA. MacGuidwin, A.E. Rouse, D.I. St. Paul, Minn. : American Phytopathological Society.

(PESTS OF PLANTS - NEMATODES)

Fumigated microplots on Plainfield loamy sand soil were infested with two levels of *Meloidogyne hapla* and one level of *Verticillium dahliae*, alone and in combination, in 1986. The inoculum density of *V. dahliae* was below the threshold for yield loss in earlier studies. Disease symptoms and yields of potato cultivar Russet Burbank grown in the microplots were evaluated in 1986-1988. There was an increase in populations of nematodes but not *Verticillium* during the 3 yr of the study. Symptoms associated with potato early dying disease were more severe in plots infested with *V. dahliae* in 1986 and 1988. Only *M. hapla* reduced tuber yields. By 1988, yields of plots infested with low and high numbers of nematodes were reduced an average of 48 and 70%, respectively, as compared to noninfested controls. Synergistic interactions between *M. hapla* and subthreshold population levels of *V. dahliae* were not observed for symptom expression or yield reduction. *Phytopathology*. May 1990. v. 80 (5). p. 482-486. Includes references. (NAL Call No.: DNAL 464.8 P56).

0263

Effect of post-plant nematicides and trickle irrigation on newly planted peach trees (soil fumigation).

Funt, R.C. Krusberg, L.R.; Ross, D.S.; Goulart, B.L. Alexandria, The Society. *Journal of the American Society for Horticultural Science*. Sept 1982. v. 107 (5). p. 891-895. 9 ref. (NAL Call No.: 81 S012).

0264

Effect of root diseases and nematodes on yield of corn in an irrigated multiple-cropping system with pest management.

PLDIDE. Sumner, D.R. Dowler, C.C.; Johnson, A.W.; Chalfant, R.B.; Glaze, N.C.; Phatak, S.C.; Epperson, J.E. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. May 1985. v. 69 (5). p. 382-387. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0265

Effect of *Rotylenchulus reniformis* on yield and oil quality of sunflowers.

NMTPA. Heald, C.M. Stein, E. Auburn, Ala. : Organization of Tropical American Nematologists. *Nematropica*. June 1987. v. 17 (1). p. 1-5. Includes references. (NAL Call No.: DNAL SB998.N4N4).

0266

The effects of drip irrigation and soil fumigation (to control *Macroposthonia xenoplax*) on 'Redglobe' peach yields and growth.

Horton, B.D. Wehunt, E.J.; Edwards, J.H.; Bruce, R.R.; Chesnee, J.L. Alexandria, Va., The Society. *Journal of the American Society for*

Horticultural Science. July 1981. v. 106 (4). p. 438-443. 18 ref. (NAL Call No.: 81 S012).

0267

Effects of fumigant and nonfumigant nematicides on *Belonolaimus longicaudatus* and *Hoplolaimus galeatus* populations and subsequent yield of cabbage.

PLDRA. Rhoades, H.L. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. June 1986. v. 70 (6). p. 581-582. Includes 6 references. (NAL Call No.: DNAL 1.9 P69P).

0268

Effects of fumigant and nonfumigant nematicides on nematode populations and yields of broccoli and squash in Florida.

NMTPA. Rhoades, H.L. Auburn, Ala. : Organization of Tropical American Nematologists. *Nematropica*. Dec 1987. v. 17 (2). p. 193-198. Includes references. (NAL Call No.: DNAL SB998.N4N4).

0269

Effects of fumigant and nonfumigant nematicides on *Pratylenchus penetrans* and yield of potato.

JONEB. Olthof, T.H.A. Lake Alfred, Fla. : Society of Nematologists. *Journal of nematology*. Oct 1989. v. 21 (4, suppl.). p. 645-649. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0270

Effects of fumigants and systemic pesticides on *Pratylenchus penetrans* and potato yield.

JONEB. Olthof, T.H.A. Raleigh, N.C. : Society of Nematologists. *Journal of nematology*. Oct 1987. v. 19 (4). p. 424-430. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0271

Effects of metam-sodium applied by drip irrigation on root-knot nematodes, *Pythium ultimum*, and *Fusarium* sp. in soil and on carrot and tomato roots.

PLDIDE. Roberts, P.A. Magyarosy, A.C.; Matthews, W.C.; May, D.M. St. Paul, Minn. American Phytopathological Society. *Plant disease*. Mar 1988. v. 72 (3). p. 213-217. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0272

Effects of soil fumigants and aldicarb on bacterial wilt and root-knot nematodes in potato.

JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Dct 1990. v. 22 (4S). p. 681-688. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0273

Effects of soil fumigants and aldicarb on corky ringspot disease and trichodorid nematodes in potato.

JDNEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Dct 1990. v. 22 (4S). p. 665-671. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0274

Effects of soil fumigants and aldicarb on nematodes, tuber quality, and yield in potato.

JDNEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Dct 1990. v. 22 (4S). p. 767-774. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0275

Effects of vesicular-arbuscular mycorrhizal fungi on infection of tamarillo (*Cyphomandra betacea*) by *Meloidogyne incognita* in fumigated soil.

PLDIDE. Cooper, K.M. Grandison, G.S. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1987. v. 71 (12). p. 1101-1106. ill. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0276

Effects on soybeans and nematode populations (*Helicotylenchus* sp., *Meloidogyne incognita*, *Paratrichodorus christiei*) of three soil fumigants (1,3-dichloropropene, Nemacur, Soilbrom) applied at several rates at time of planting (USA).

Minton, N.A. Parker, M.B. Gainesville, Fla., Organization of Tropical American Nematologists. Nematropica. Apr 1979. v. 9 (1). p. 36-39. 6 ref. (NAL Call No.: SB998.N4N4).

0277

Efficacy of fumigant and nonfumigant nematicides for control of *Meloidogyne arenaria* on peanut.

AANEFF. Dickson, D.W. Hewlett, T.E. Lawrence, Kan. : Society of Nematologists. Annals of applied nematology. Oct 1988. v. 2. p. 95-101. Includes references. (NAL Call No.: DNAL SB998.N4A5).

0278

Efficacy of fumigant nematicides to control *Hoplolaimus columbus* on cotton.

JONEB. Noe, J.P. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Dct 1990. v. 22 (4S). p. 718-723. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0279

Efficacy of methyl bromide-chloropicrin and ethylene dibromide-chloropicrin mixtures for control of nematodes (*Paratrichodorus* (N.) *christiei*, *Meloidogyne incognita*) and *Verticillium* wilt of tomato (*Verticillium albo-atrum*).

Overman, A.J. Jones, J.P. s.l., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. 1980 (pub 1981). v. 93. p. 248-250. 20 ref. (NAL Call No.: 81 F66).

0280

Efficacy of selected fumigant and nonfumigant nematicides to control *Meloidogyne javanica* in Florida tobacco (*Nicotiana tabacum*, root-knot nematode).

Garcia M, R. Rich, J.R. Auburn, Ala. : Organization of Tropical American Nematologists. Nematropica. Dec 1983. v. 13 (2). p. 125-134. Includes references. (NAL Call No.: SB998.N4N4).

0281

Efficacy of soil fumigants and nonfumigants for controlling plant nematodes and increasing yield of snap bean (*Phaseolus vulgaris*, Florida).

Rhoades, H.L. Auburn, Ala. : Organization of Tropical American Nematologists. Nematropica. Dec 1983. v. 13 (2). p. 239-244. Includes references. (NAL Call No.: SB998.N4N4).

(PESTS OF PLANTS - NEMATODES)

0282

Efficacy of sweep-shank fumigation with 1,3-dichloropropene against *Pratylenchus penetrans* and subsequent groundwater contamination.

PLDRA. Loria, R. Eplee, R.E.; Baier, J.H.; Martin, T.M.; Moyer, D.D. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1986. v. 70 (1). p. 42-45. ill. Includes 18 references. (NAL Call No.: DNAL 1.9 P69P).

0283

The employment of a non-fumigant nematicide for control of the root-knot and lesion nematodes (*Meloidogyne javanica*, *Pratylenchus brachyurus*, *Dioscorea rotundata*) on yams and crop preservation in storage.

Badra, T. Steele, W.M.; Caveness, F.E. Gainesville, Fla., Organization of Tropical American Nematologists. Nematropica. Oct 1980. v. 10 (2). p. 81-85. ill. 13 ref. (NAL Call No.: SB998.N4N4).

0284

Evaluation of a fumigant nematicide applied at planting and a liquid nematicide applied midseason to control soybean yield loss in soybean cyst nematode (SCN) tolerance studies, 1983-84.

FNETD. Reese, P.F. Jr. Boerma, H.R.; Hussey, R.S. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 80. (NAL Call No.: DNAL 464.9 AM31R).

0285

Evaluation of deep placement of soil fumigants for control of *Meloidogyne chitwoodi* on potato, 1983.

FNETD. Santo, G.S. Ponti, R.P.; Wilson, J.H. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 108. (NAL Call No.: DNAL 464.9 AM31R).

0286

Fall fumigation of potato with 1,3-dichloropropene: efficacy against *Pratylenchus crenatus*, yield response, and groundwater contamination potential.

PLDIDE. Kotcon, J.B. Loria, R. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1987. v. 71 (12). p. 1122-1124. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0287

Field evaluation of sweet potato clones for reaction to root-knot and stubby root nematodes in California (*Ipomoea batatas*, *Meloidogyne incognita*, *Paratrichodorus minor*, soil fumigation).

Roberts, P.A. Scheuerman, R.W. Alexandria, Va. : American Society for Horticultural Science. HortScience. Apr 1984. v. 19 (2). p. 270-273. Includes references. (NAL Call No.: SB1.H6).

0288

Fumigants and nematicides under California conditions.

McKenry, M.V. Oakland : University of California, Division of Agriculture and Natural Resources, 1987. Fate of pesticides in the environment : proceedings of a technical seminar / James W. Biggar and James N. Seiber, editors and technical coordinators. p. 47-49. Includes references. (NAL Call No.: DNAL TD196.P38F3).

0289

Fumigants in bedded rows for tomato root knot and Verticillium wilt, 1985.

FNETD. Shoemaker, P.B. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 82. (NAL Call No.: DNAL 464.9 AM31R).

0290

Growth response of apple and pear seedlings to pear soil fumigation with chloropicrin (Parasitic nematodes, *Pratylenchus* spp.).

Koch, B.L. Covey, R.P. Jr.; Haglund, W.A. Alexandria, Va., American Society for Horticultural Science. HortScience. Oct 1980. v. 15 (5). p. 598-600. 10 ref. (NAL Call No.: SB1.H6).

0291

The importance of soil fumigation for nematode control.

CAGRA. Radewald, J.D. McKenry, M.V.; Roberts, P.A.; Westerdahl, B.B. Berkeley, Calif. : The Station. California agriculture - California Agricultural Experiment Station. Nov/Dec 1987. v. 41 (11/12). p. 16-17. (NAL Call No.: DNAL 100 C12CAG).

0292

Influence of fumigant nematicides on southern root-knot nematodes and chile pepper yields, 1981 (*Meloidogyne incognita*, *Capsicum annuum*).

Thomas, S.H. FNETD. (s.l.) : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1983. v.

38. p. 5. (NAL Call No.: 464.9 AM31R).

0293

Influence of preplant soil fumigants on growth and survival of Delicious apple trees planted on a peach tree short life site (Nematoda, Fungi, Georgia).

Miller, S.S.GARBB. Athens : The Stations. Research bulletin - University of Georgia, Experiment Stations. Apr 1982. Apr 1982. (274). 7 p. 12 ref. (NAL Call No.: S51.E2).

0294

Influence of soil fumigation on root rot incidence and yield of beans grown on raised ridges, 1981 (Bean (snap) (Phaseolus vulgaris 'Checkmate'), root rot fungi; Fusarium solani f. phaseoli, Pythium ultimum, Rhizoctonia solani, Thielaviopsis basicola, lesion nematode; Pratylenchus penetrans).

Abawi, G.S. Crosier, D.C.; Cobb, A.C. (s.l.). The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1982. v. 37. p. 188. (NAL Call No.: 464.9 AM31R).

0295

The influence of soil fumigation on strawberry yield and economics in black root rot infested fields.

AAREEZ. Wolfe, D. Hartman, J.R.; Brown, G.R.; Strang, J. New York, N.Y. : Springer. This study was designed to determine if the cost of soil fumigation would be recovered in the first year of production when yield potential was being limited by the strawberry root rot complex. Yield, stand counts, leaf mineral nutrient levels, and nematode population levels, were evaluated for each of three treatments consisting of 67% methyl bromide plus 33% chloropicrin (MC33), 98% methyl bromide plus 2% chloropicrin (MC2) and a nonfumigated control. Yield was significantly greater in the fumigated plots than the control plots but did not differ significantly between the two fumigants. Stand counts and leaf mineral nutrient levels were not found to vary significantly among treatments. Compared with the control, fewer plant parasitic nematodes were observed in plots treated with either MC33 or MC2. Nematode population differences between the MC33 and MC2 treatments were not evident. The cause of the black root rot complex was not determined from this study. Soil fumigation with either fumigant increased yields enough to justify this practice economically. Applied agricultural research. Winter 1990. v. 5 (1). p. 17-20. Includes references. (NAL Call No.: DNAL S539.5.A77).

0296

Interaction of endomycorrhizal fungi, superphosphate, and Meloidogyne incognita on cotton in microplot and field studies.

JONEB. Smith, G.S. Roncadori, R.W.; Hussey, R.S. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Apr 1986. v. 18 (2). p. 208-216. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0297

Maintaining barriers to the spread of Radopholus citrophilus in Florida citrus orchards.

NMTPA. Duncan, L.W. Kaplan, D.T.; Noling, J.W. Auburn, Ala. : Organization of Tropical American Nematologists. Nematropica. June 1990. v. 20 (1). p. 71-88. Includes references. (NAL Call No.: DNAL SB998.N4N4).

0298

Management of Fusarium wilt, Fusarium crown rot, Verticillium wilt (race 2), southern blight, and root-knot of tomato on fine sandy soils.

Jones, J.P. Overman, A.J. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986. v. 98. p. 229-231. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0299

Meloidogyne incognita resistance characteristics in tomato genotypes developed for processing.

JONEB. Roberts, P.A. May, D. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1986. v. 18 (3). p. 353-359. Includes 15 references. (NAL Call No.: DNAL QL391.N4J62).

0300

Movement and transformation of 1,3-dichloropropene in the soil of flower-bulb fields.

AECTCV. Van der Pas, L.J.T. Leistra, M. New York, N.Y. : Springer-Verlag. Archives of environmental contamination and toxicology. July 1987. v. 16 (4). p. 417-422. Includes references. (NAL Call No.: DNAL TD172.A7).

0301

Multiple-species nematode resistance in soybean: effect of genotype and fumigation on yield and nematode numbers.

CRPSAY. Weaver, D.B. Rodriguez-Kabana, R.; Carden, E.L. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988.

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v. 28 (2). p. 293-298. Includes references.
(NAL Call No.: DNAL 64.8 C883).

0302

Nematicides--a historical review.

Johnson, A.W. Feldmesser, J. Hyattsville, Md. : Society of Nematologists, 1987. Vistas on nematology : a commemoration of the twenty-fifth anniversary of the Society of Nematologists / edited by Joseph A. Veech and Donald W. Dickson. Literature review. p. 448-454. Includes references. (NAL Call No.: DNAL QL391.N4V57).

0303

Nematode persistence after fumigation: a methodological problem.

JONEB. McSorley, R. Parrado, J.L. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Apr 1984. v. 16 (2). p. 209-211. Includes 15 references. (NAL Call No.: DNAL QL391.N4J62).

0304

Nematode population increases on six light-fleshed sweetpotato cultivars and effects on yield.

McSorley, R. O'Hair, S.K.; Parrado, J.L. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. June 1985. v. 97. p. 159-162. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0305

Occupational exposure to 1,3-dichloropropene (Telone II) in Hawaiian pineapple culture.

AEHLA. Albrecht, W.N. Washington, D.C. : Heldref Publications. Archives of environmental health. Sept/Oct 1987. v. 42 (5). p. 286-291. Includes references. (NAL Call No.: DNAL RC963.A1A7).

0306

Post-fumigation irrigation for control of root-knot nematodes with Telone II soil fumigant (*Meloidogyne incognita*).

Youngson, C.R. Midland, Mich., Agricultural Products Dept., Dow Chemical Co. Down to earth. Jan 1982. v. 38 (1). p. 28-36. ill. Includes 7 ref. (NAL Call No.: 38i D75).

0307

Response of a resistant soybean cultivar to fumigation at planting for the control of soybean cyst (*Heterodera glycines*) and root-knot nematodes (*Meloidogyne incognita*, USA).

Kinloch, R.A. Gainesville, Fla., Organization of Tropical American Nematologists. Nematropica. Apr 1979. v. 9 (1). p. 27-32. 6 ref. (NAL Call No.: SB998.N4N4).

0308

Response of soybeans and nematodes to AT-planting applications of fumigant and nonfumigant nematicides.

Minton, N.A. AR-SO. Parker, M.B. Gainesville, Fla., Organization of Tropical American Nematologists. Nematropica. Apr 1980. v. 10 (1). p. 31-37. ill. 9 ref. (NAL Call No.: SB998.N4N4).

0309

Response of soybeans and populations of the lance nematode, *Hoplolaimus columbus*, to fumigant nematicides applied at planting.

Blackmon, C.W. Lewis, S.A. Gainesville, Fla., Organization of Tropical American Nematologists. Nematropica. Apr 1979. v. 9 (1). p. 3-7. 4 ref. (NAL Call No.: SB998.N4N4).

0310

Role of *Pratylenchus penetrans* in the potato early dying disease of Russet Burbank potato.

PHYTA. MacGuidwin, A.E. Rouse, D.I. St. Paul, Minn. : American Phytopathological Society. The interaction of *Pratylenchus penetrans* and *Verticillium dahliae* for symptom expression of potato early dying and yield and quality of tubers of Russet Burbank potato was evaluated in microplots and field plots. Soil was fumigated with metham sodium before being infested with varying population levels of the nematode and/or fungus. In the microplot study, low and high initial populations of *P. penetrans* (about 25 and 75/100 cm³ of soil) or *V. dahliae* (about 3 and 9 colony-forming units/g of dry soil) had no effect on number and fresh weight of tubers compared to the control. Combined infestations of both organisms reduced yields up to 20% but did not affect number of tubers compared to the control. Dry matter content of tubers was reduced by *V. dahliae* compared to the control regardless of presence or absence of the nematode. Foliar symptoms of potato early dying were caused by *V. dahliae* alone, but were more severe when nematodes were also present with *V. dahliae*. Estimates of percent defoliation at weekly intervals beginning 13 wk after planting until harvest were consistent with rating of symptoms at 13 wk after planting. In field experiments, initial populations of *P. penetrans* ranging from eight to 44 nematodes/100 cm³ of soil did not affect yield

or quality of tubers compared to the control. Initial populations of *V. dahliae* alone reduced yield one year but not another. Regardless of the effect of the fungus alone, the combination of *V. dahliae* and *P. penetrans* reduced yield by as much as 36% and also reduced specific gravity compared to the control. The population dynamics of *P. penetrans* was not consistent among years of experiments; populations of this nematode were either decreased or not affected by *V. dahliae*. *Phytopathology*. Oct 1990. v. 80 (10). p. 1077-1082. Includes references. (NAL Call No.: DNAL 464.8 P56).

0311

Root-knot nematode effect on nine cotton cultivars in Mississippi.
CRPSAY, Minton, E.B. Meredith, W.R. Jr. Madison, Wis. : Crop Science Society of America. *Crop science*. Sept/Oct 1987. v. 27 (5). p. 1001-1004. Includes references. (NAL Call No.: DNAL 64.8 C883).

0312

Slash pine growth and response to fertilizer after application of pesticides to the planting site (*Pinus elliotii* var. *elliotii*, soil fumigation, *Meloidodera floridensis*).
Bengtson, G.W. Smart, G.C. Jr. Washington, D.C., Society of American Foresters. *Forest science*. Sept 1981. v. 27 (3). p. 487-502. 17 ref. (NAL Call No.: 99.8 F7632).

0313

Soil fumigants for control of nematodes, *Fusarium* wilt, and *Fusarium* crown rot on tomato.
Overman, A.J. Jones, J.P. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. June 1985. v. 97. p. 194-197. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0314

Soil fumigants for tomato production on Rockdale soils.
McSorley, R. McMillan, R.T. Jr.; Parrado, J.L. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986. v. 98. p. 232-237. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0315

Soil fumigation: principles and application technology.

JONEB. Lembright, H.W. Lake Alfred, Fla. : Society of Nematologists. *Journal of nematology*. Supplement to the *Journal of Nematology* (*Annals of Applied Nematology*).~ Literature review. Oct 1990. v. 22 (4S). p. 632-644. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0316

Soil fumigation via drip irrigation under full-bed mulch culture for row crops (Control of rootknot nematodes *Meloidogyne incognita*, *Verticillium* wilt, *Verticillium albo-atrum*).
Overman, A.J. (S.l.) : The Society. Proceedings - Soil and Crop Science Society of Florida. 1982. v. 41. p. 153-155. Includes references. (NAL Call No.: 56.9 S032).

0317

Soil solarization, reaction, and fumigation effects on double-cropped tomato under full-bed mulch.

Overman, A.J. Jones, J.P. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986 (pub. 1987). v. 99. p. 315-318. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0318

Spring or fall fumigation for control of *Meloidogyne* spp. on tobacco.

JONEB. Fortnum, B.A. Gooden, D.T.; Currin, R.E. III; Martin, S.B. Lake Alfred, Fla. : Society of Nematologists. *Journal of nematology*. Supplement to the *Journal of Nematology* (*Annals of Applied Nematology*). Oct 1990. v. 22 (4S). p. 645-650. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0319

Survey of nematodes associated with almond production in California.

PLDRA. McKenry, M.V. Kretsch, J. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. Jan 1987. v. 71 (1). p. 71-73. Includes references. (NAL Call No.: DNAL 1.9 P69P).

PLANT DISEASES - GENERAL

0320

Comparative control of soilborne pests on tomato and pepper by soil fumigation.

McSorley, R. McMillan, R.T.; Parrado, J.L. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986 (pub. 1987). v. 99. p. 350-353. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0321

Controlling replant diseases of pome and stone fruits in Northeastern United States by preplant fumigation.

Mai, W.F. Abawi, G.S. St. Paul, Minn., American Phytopathological Society. Plant disease. Nov 1981. v. 65 (11). p. 859-864. ill. 16 ref. (NAL Call No.: 1.9 P69P).

0322

Disease control in the nursery with special reference to woody and herbaceous perennials / author, Charles C. Powell .

Powell, Charles C. Columbus, Ohio? : Ohio Cooperative Extension Service, Ohio State University, 1987 . Abstract: This publication discusses strategies for and steps involved in disease management in the nursery with emphasis on woody and herbaceous perennial ornamentals. It includes information on plant pathogens and the diseases they cause, soil fumigation, lists of common diseases of ornamentals in Ohio, pesticide recommendations, dilution and conversion tables and Ohio Poison Information Centers. Cover title.~ "Agdex 275/636."~ "1/87-4M Revised"--P. i. 24 p. : col. ill. ; 28 cm. (NAL Call No.: DNAL 275.29 OH32 no.571 1987).

0323

Efficacy of metam sodium applied via drip irrigation on tomato.

Overman, A.J. Csizinszky, A.A.; Jones, J.P.; Stanley, C.D. S.l. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1987. v. 46. p. 4-7. Includes references. (NAL Call No.: DNAL 56.9 S032).

0324

Forest spraying pesticide applicator's training manual /prepared by extension specialists at the University of Minnesota.

St. Paul, Minn. : Minnesota Extension Service, University of Minnesota, 1987. Abstract: This guide for the Minnesota commercial agricultural pesticide applicator is prepared as a training aid for those applicators who wish to become certified to apply or supervise the application of "restricted-use" pesticides in Minnesota forests. The principles of forest pest

management, the identification and control of insect, weed, disease and vertebrate pests, application equipment, calibration techniques, pesticide formulation, fumigation principles and other treatment methods are discussed. The toxicity of pesticides and their potential danger to humans, environmental hazards, safety precautions, label information, protective clothing, storage, and disposal are covered. A bibliography, questions and answers, and a glossary complete this manual. Cover title.~ "9/87."~ "G4418." vi, 268 p. : ill. ; 28 cm. Includes bibliographical references (p. 195). (NAL Call No.: DNAL SB952.863.M6F6).

0325

Influence of preplant soil fumigants on growth and survival of Delicious apple trees planted on a peach tree short life site (Nematoda, Fungi, Georgia).

Miller, S.S.GARBB. Athens : The Stations. Research bulletin - University of Georgia, Experiment Stations. Apr 1982. Apr 1982. (274). 7 p. 12 ref. (NAL Call No.: S51.E2).

0326

Movement of chloropicrin, vapam, and methylisothiocyanate in southern pine and Douglas fir timbers /by Terry L. Highley. Highley, Terry L. Madison, WI : Forest Products Laboratory, 1987 . Chiefly tables.~ At head of title: The International Research Group on Wood Preservation, Working Group III-Preservatives and Methods of Treatment, Sub-Group 3-Remedial Treatments.~ "Paper prepared for the eighteenth meeting, Honey Harbour, Ontario, Canada, May 17-22, 1987."~ "19 February 1987."~ "Document no.: IRG/WP/3410." 15 p. ; 28 cm. Bibliography: p. 15. (NAL Call No.: DNAL aSB955.H56).

0327

Plant disease control /William D. Ross, George H. Bridgman ; revised by Collette Beaupre' and Mark A. Ferrell.

Ross, William D. Bridgman, George H.; Beaupre', Collette.; Ferrell, Mark A. Laramie, WY : Cooperative Extension Service, College of Agriculture, University of Wyoming : University of Wyoming, Dept. of Plant, Soil and Insect Sciences, 1990? . Abstract: This manual is for pesticide applicators engaged in plant disease control in the state of Wyoming. It discusses fungicides, bactericides and nematocides used to treat infectious diseases of seeds, crops and ornamental plants. Color photographs illustrate and identify the infections clearly, supplementing the text. Treatment techniques described include both chemical and nonchemical control, soil fumigation, seed treatment and foliar treatments. ii, 15, 16 p. : ill. (some col.) ; 28 cm. Includes bibliographical references (p. 13-14). (NAL Call No.: DNAL SB601.R6).

0328

Response of 'Redchief' strawberry to soil profile modification, soil fumigation and bedtype in the Missouri Ozark Region.
Kaps, M.L. Odneal, M.B. s.l. : North American Strawberry Growers Association. Advances in strawberry production. Spring 1986. v. 5. p. 18-21. Includes references. (NAL Call No.: DNAL SB385.A34).

0329

Response of Russet Burbank potatoes to soil fumigation and nitrogen fertilizers.
APOJA, Davis, J.M. Loescher, W.H.; Hammond, M.W.; Thornton, R.E. Orono, Me. : Potato Association of America. American potato journal. Feb 1986. v. 63 (2). p. 71-79. Includes references. (NAL Call No.: DNAL 75.8 P842).

0330

Small fruit disease control.
Gazaway, W.S. Auburn, Ala. : The Service. Circular ANR - Alabama Cooperative Extension Service, Auburn University. In series analytic: 1989 Small Fruits, Insects, Diseases and Weed Control Recommendations. Nov 1988. (478). p. 4-8. (NAL Call No.: DNAL S544.3.A2C47).

0331

Soil fumigants to substitute for EDB.
Dunn, R.A. Apopka : The Foliage Foundation. Foliage digest. Feb 1984. v. 7 (2). p. 4-5. (NAL Call No.: DNAL SB431.F6).

0332

Soil fumigation and treatment to control soil-borne diseases and nematodes in home gardens.
Barnes, G.L. Conway, K.E.; Russell, C.C.; Pratt, P.W. Stillwater, Okla. : The Service. OSU extension facts - Cooperative Extension Service, Oklahoma State University. Aug 1984. (7614,rev.). 4 p. (NAL Call No.: DNAL S544.3.0505).

0333

Soil fumigation with dazomet and methyl bromide for control of corky root of iceberg lettuce.
PLDIDE. O'Brien, R.D. Van Bruggen, A.H.C. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1990. v. 74 (12). p. 1022-1025. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0334

1988 disease management guide for commercial vegetable growers /prepared by M.C. Shurtleff, R.E. Wagner, and T.A. Melton.
Shurtleff, Malcolm C. Wagner, R. E.; Melton, Thomas A. Urbana, Ill. : University of Illinois at Urbana-Champaign, College of Agriculture, Cooperative Extension Service, 1987 . Abstract: This Illinois guide for commercial vegetable growers provides condensed disease management recommendations for commercial vegetable crop diseases for 1988. Fungicide use restrictions, label information on fungicides and nematicides, and suggestions on fungicide application, soil fumigation and nematocide use are included. Discusses IPM (Integrated Pest Management) practices and proper pesticide use. Caption title.~ "Revised annually."~ "November 1987.". 8 p. ; 28 cm. (NAL Call No.: DNAL 275.29 I162C no.1184 1987).

PLANT DISEASES - FUNGAL

0335

Banded application of soil fumigants for root rot control in snap beans, 1981 (Beans (snap) (*Phaseolus vulgaris* 'Topcrop'), root rot complex; *Fusarium solani* f.sp. *phaseoli*, *Pythium ultimum*, *Rhizoctonia solani*).
Forster, R.L. (s.l.). The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1982. v. 37. p. 58. (NAL Call No.: 464.9 AM31R).

0336

Basamid and methyl bromide compounds as fumigants in carnation and chrysanthemum production in selected propagation media.
Semer, C.R. IV. S.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. Aug 1988. v. 100. p. 330-334. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0337

Basamid and solar heating effective for control of plant-parasitic nematodes at Bessey Nursery, Nebraska.

Hildebrand, D.M. Dinkel, G.B. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a meeting of the Western Forest Nursery Associations, Aug 8-11, 1988, Vernon, British Columbia. Dec 1988. (167). p. 139-144. Includes references. (NAL Call No.: DNAL ASD11.A42).

0338

Bound chlorinated residue in chloropicrin-treated Douglas-fir.

WOOF AUJ. Goodell, B.S. Krahmer, R.L.; Graham, R.D. Madison : Society of Wood Science and Technology. Wood and fiber science. Jan 1986. v. 18 (1). p. 127-133. ill. Includes references. (NAL Call No.: DNAL TA419.W6).

0339

Comparison of three soil fumigants in a barefoot conifer nursery.

TPLNA. Campbell, S.U. Kelpsas, B.R. Washington, D.C. : The Service. Tree planters' notes - U.S. Department of Agriculture, Forest Service. Fall 1988. v. 39 (4). p. 16-22. Includes references. (NAL Call No.: DNAL 1.962 C5T71).

0340

Comparison of two rates of methyl bromide soil fumigation for control of *Fusarium oxysporum* of carnations.

Besemer, S.T. CA. McCain, A.H. Berkeley, The Service. Flower and nursery report for commercial growers. California. University, Berkeley. Cooperative Extension Service. Winter 1979. Winter 1979. p. 5-6. ill. (NAL Call No.: SB1.A1F5).

0341

Control of cylindrocladium black rot of peanut with soil fumigants having methyl isothiocyanate as the active ingredient.

PLDIDE. Phipps, P.M. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1990. v. 74 (6). p. 438-441. ill. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0342

Control of mold and stain on methyl bromide fumigated red oak sapwood.

FPJUA. Schmidt, E.L. Madison, Wis. : Forest Products Research Society. Forest products journal. Feb 1985. v. 35 (2). p. 61-62. Includes 10 references. (NAL Call No.: DNAL 99.9 F7662J).

0343

Control of pink root disease in onion using solarization and fumigation.

JOSH B. Hartz, T.K. Bogle, C.R.; Bender, D.A.; Avila, F.A. Alexandria, Va. : The Society. Effects of solarization and fumigation on control of pink root disease of onion (*Allium cepa* L.) were determined in microplot studies in 1984. A 62-day solarization treatment significantly improved stand and productivity of Granex 429' onion while decreasing pink root expression. Metam-sodium fumigation gave equivalent improvement in stand and reduction in pink root expression, while causing an even greater onion growth response. Effects of these soil disinfestation techniques in onion seedbeds on subsequent field performance of onion transplants were examined in 1985-1986. Fumigation and solarization of individual soil beds virtually eliminated *Pyrenochaeta terrestris* infection of onion transplants. Seedbed treatment had no beneficial effect on yield, bulb diameter, or pink root expression at harvest when transplants were grown to maturity in an infested field. Chemical name used: sodium methyl dithiocarbamate (anhydrous) (metam-sodium). Journal of the American Society for Horticultural Science. July 1989. v. 114 (4). p. 587-590. Includes references. (NAL Call No.: DNAL 81 S012).

0344

Control of potato early dying on silt-loam with fumigants, 1981 (Potato (*Solanum tuberosum* 'Kennebec'), early dying; *Verticillium dahliae*).

Rowe, R.C. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1982. v. 37. p. 78-79. (NAL Call No.: 464.9 AM31R).

0345

Control of powdery mildew on soft red winter wheat at Rock Springs, Pennsylvania, in fumigated and non-fumigated soil, 1979 (Wheat (*Triticum aestivum* 'Blueboy'), powdery mildew; *Erysiphe graminis* f. sp. *tritici*, *Septoria blight*; *Septoria nodorum*, *Septoria tritici*).

Cole, H. Jr. Frank, J.A.; Marshall, H.G. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1980. v. 35. p. 120. (NAL Call No.: 464.9 AM31R).

0346

Control of *Pythium* seed rot and preemergence damping-off of chickpea in the U.S. Pacific Northwest and Spain.

PLDIDE. Trapero-Casas, A. Kaiser, W.J.; Ingram, D.M. St. Paul, Minn. : American Phytopathological Society. Plant disease. Aug 1990. v. 74 (8). p. 563-568. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0347

Control of the black shank-root-knot complex on tobacco with fumigant nematicides and Ridomil, 1982 (*Phytophthora parasitica* f. *nicotianae*, with the root-knot nematode on *Nicotiana tabacum*).

Fortnum, B.A.FNETD. Currin, R.E. (s.l.) : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1983. v. 38. p. 13. (NAL Call No.: 464.9 AM31R).

0348

Control of *Verticillium* wilt of potato by soil fumigation, 1982 (*Verticillium dahliae*, *Solanum tuberosum*).

Easton, G.D.FNETD. Nagle, M.E. (s.l.) : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1983. v. 38. p. 103-104. (NAL Call No.: 464.9 AM31R).

0349

Controlling wood deterioration with fumigants: a review.

FPJDA. Morrell, J.J. Corden, M.E. Madison, Wis. : Forest Products Research Society. Forest products journal. Literature review. Oct 1986. v. 36 (10). p. 27-34. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0350

Corky root of tomato in California caused by *Pyrenochaeta lycopersici* and control by soil fumigation (Brown root rot).

Campbell, R.N. Schweers, V.H.; Hall, D.H. St. Paul, American Phytopathological Society. Plant disease. Aug 1982. v. 66 (8). p. 657-661. 23 ref. (NAL Call No.: 1.9 P69P).

0351

Dazomet use for seedbed fumigation at the PFRA Shelterbelt Centre, Indian Head, Saskatchewan.

Alspach, L.K. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 40-42. ill. Includes references. (NAL Call No.: DNAL aSD11.A42).

0352

Decomposition of methylisothiocyanate in Douglas-fir heartwood.

FPJDA. Zahora, A.R. Morrell, J.J. Madison, Wis. : Forest Products Research Society. Decomposition of the wood fumigant methylisothiocyanate (MIT) was studied in blocks of Douglas-fir heartwood. Decomposition was influenced by wood moisture content (MC), with decomposition rates estimated at 0.2, 0.9, and 1.6 percent per week of the total bound MIT for wood fumigated at 0, 12, and 60 percent MC, respectively. Dimethylthiourea and 2,4-dimethyl-1,2,4-thiadiazolidine-3,5-dithione, which formed during fumigation, showed toxic activity against the decay fungus *Poria carbonica*. Elemental sulfur was also formed, but showed minimal fungitoxic activity. Some MIT remained in fumigated wood even after extensive aeration under dry conditions. This residual MIT rapidly volatilized at fungitoxic concentrations when wood was wetted and may provide residual protection against fungal invasion. Forest products journal. Oct 1988. v. 38 (10). p. 46-52. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

(PLANT DISEASES - FUNGAL)

0353

Effect of biocidal treatments on cation exchange capacity and fusarium blight of soybean in Delaware soils.

AGJOAT. Sandler, H.A. Carroll, R.B.; Sparks, D.L. Madison, Wis. : American Society of Agronomy. Fusarium wilt has caused significant losses in soybean *Glycine max* (L.) Merr. production and is very difficult to control because it is caused by the soil-borne fungus *Fusarium oxysporum*. A better understanding of the relationship between soil characteristics and the pathogen and between biocidal treatments and physiochemical properties is needed, especially for soils that appear to be suppressive. The effects of autoclaving and Vapam fumigation on cation exchange capacity, organic matter content, clay content, pH, and *Fusarium* wilt of soybean were determined for several different Delaware soil types (Typic Hapludults, Typic Quartzipsamments, and Typic Umbraquults). 'Essex' soybean was grown in the treated soils that had been infested, prior to planting, with 6.3×10^4 viable spores per gram of dry soil of a pathogenic *Fusarium oxysporum* isolate. Treatments were arranged on the greenhouse bench in a randomized complete-block design with five replications. Cation exchange capacity generally increased with fumigation and decreased with autoclaving, but differences were not significant for all soils. Organic matter content increased following fumigation in three soils, and pH values were lowered by both biocidal treatments in all soils except a Matapeake silt loam. Disease incidence and severity were affected differently for each soil type. *Agronomy journal*. Jan/Feb v. 80 (1). p. 8-12. Includes references. (NAL Call No.: DNAL 4 AM34P).

0354

Effect of *Meloidogyne hapla*, alone and in combination with subthreshold populations of *Verticillium dahliae*, on disease symptomology and yield of potato.

PHYTA. MacGuidwin, A.E. Rouse, D.I. St. Paul, Minn. : American Phytopathological Society. Fumigated microplots on Plainfield loamy sand soil were infested with two levels of *Meloidogyne hapla* and one level of *Verticillium dahliae*, alone and in combination, in 1986. The inoculum density of *V. dahliae* was below the threshold for yield loss in earlier studies. Disease symptoms and yields of potato cultivar Russet Burbank grown in the microplots were evaluated in 1986-1988. There was an increase in populations of nematodes but not *Verticillium* during the 3 yr of the study. Symptoms associated with potato early dying disease were more severe in plots infested with *V. dahliae* in 1986 and 1988. Only *M. hapla* reduced tuber yields. By 1988, yields of plots infested with low and high numbers of nematodes were reduced an average of 48 and 70%, respectively, as compared to noninfested controls. Synergistic interactions between *M. hapla* and subthreshold population levels of *V. dahliae* were not observed for symptom expression or yield reduction. *Phytopathology*. May 1990. v. 80 (5). p. 482-486. Includes

references. (NAL Call No.: DNAL 464.8 P56).

0355

The effect of pH on decomposition of Mylone (dazomet) and tridipam to fungitoxic methylisothiocyanate in wood.

W00FAJ. Morrell, J.J. Sexton, C.M.; Lebow, S. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Oct 1988. v. 20 (4). p. 422-430. Includes references. (NAL Call No.: DNAL TA419.W6).

0356

Effect of *Pythium ultimum* and metalaxyl treatments on root length and mycorrhizal colonization of cotton, onion, and pepper.

PLDIDE. Afek, U. Menge, J.A.; Johnson, E.L.V. St. Paul, Minn. : American Phytopathological Society. Plant disease. Feb 1990. v. 74 (2). p. 117-120. Includes references. (NAL Call No.: DNAL 1.9P69P).

0357

Effect of Rhizobacteria and metham-sodium on growth and root microflora of celery cultivars.

PHYTA. Becker, J.O. Hepfer, C.A.; Yuen, G.Y.; Van Gundy, S.D.; Schroth, M.N.; Hancock, J.G.; Weinhold, A.R.; Bowman, T. St. Paul, Minn. : American Phytopathological Society. Treatment of celery transplants with several rhizobacterial strains or fumigation of soil with metham-sodium promoted early plant growth and increased yield in fields infested with *Fusarium oxysporum* f. sp. *apii*. Results of both bacterial and chemical treatments varied substantially among planting times and in successive years. Other factors affecting results were the cultivar and bacterial strains that were tested. *Pseudomonas aureofaciens* strain PGS 12 caused significant increases in early plant growth in three of three trials and in yield in two of three trials with cultivar Fordhook. Increases in early plant growth or yield, however, were not obtained when cultivars Tall Utah 52-70 HK (four trials) and Tall Utah 52-70 R (two trials) were treated with PGS 12. One of the trials contained all three cultivars in a factorial design. *Bacillus* sp. X2.2 caused increases in early plant growth and yield with cultivar Fordhook in one trial and had a significant interaction with all three cultivars in the combined trial. Fumigation with metham-sodium resulted in harvest weight increases varying from 18 to 75% with the cultivar Fordhook in different seasons, and from 18 to 81% among cultivars planted at the same time. Early-season plant growth promotion did not necessarily correlate with shoot weight of plants at harvest. Some qualitative and quantitative differences in fungal microflora on roots were observed in the different bacterial and chemical treatments, but, in general, the detection methods for evaluating the seasonal succession of

microflora under field conditions were too insensitive and labor-intensive to conclusively relate plant growth promotion to the presence or absence of specific microorganisms, including *F. o. apii*. *Phytopathology*. Feb 1990. v. 80 (2). p. 206-211. Includes references. (NAL Call No.: DNAL 464.8 P56).

0358

Effect of root diseases and nematodes on yield of corn in an irrigated multiple-cropping system with pest management.
PLDIDE, Sumner, D.R. Dowler, C.C.; Johnson, A.W.; Chalfant, R.B.; Glaze, N.C.; Phatak, S.C.; Epperson, J.E. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. May 1985. v. 69 (5). p. 382-387. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0359

Effect of soil fumigation and mulches on Fusarium wilt control of cantaloupe, 1978 (Cantaloupe (*Cucumis melo* 'Gold Star', 'Burpee Hybrid'), Fusarium wilt; Fusarium oxysporum f. melonis).
Kantzes, J.G. (s.l.), The Society. *Fungicide and nematicide tests; results - American Phytopathological Society*. 1980. v. 35. p. 63. (NAL Call No.: 464.9 AM31R).

0360

Effect of soil fumigation on N₂ (nitrogen)-fixation and yield of field bean when grown on Fusarium-infested soils (Kidney beans, Washington).
Bezdicsek, D.F. Vigue, G.T.; Burke, D. Madison, Wis., American Society of Agronomy. *Agronomy Journal*. Nov/Dec 1981. v. 73 (6). p. 1062-1065. ill. (NAL Call No.: 4 AM34P).

0361

Effect of soil fumigation with methyl bromide and Vorlex on bean yield and root-rot severity, 1980 (Bean (snap) (*Phaseolus vulgaris* 'Early Gallatin'), root rot complex; Fusarium solani f. sp. phaseoli, Pythium ultimum, Rhizoctonia solani, Thielaviopsis basicola).
Abawi, G.S. Edds, K.K. (s.l.), The Society. *Fungicide and nematicide tests; results - American Phytopathological Society*. 1981. v. 36. p. 51. (NAL Call No.: 464.9 AM31R).

0362

Effective soil fumigation (to control pathogenic fungi that cause root rot and damping-off in forest tree seedlings, methyl bromide, guidelines).
Cordell, C.E. (Atlanta, Ga.) : The Region. Technical publication R8-TP - USDA Forest

Service, Southern Region. Aug 1983. *Proceedings of the 1982 Southern Nursery Conferences*. Aug 1983. (4). p. 196-201. Includes references. (NAL Call No.: aSD11.U5962).

0363

Effects of fumigation and fungal antagonist (*Penicillium funiculosum*, *Trichoderma harzianum*, *Aspergillus ochraceus*) on the relationships of inoculum density to infection incidence and disease severity in Fusarium (*oxysporum radicleslycopersici*) crown rot of tomato.
Marois, J.J. Mitchell, D.J. St. Paul, Minn., American Phytopathological Society. *Phytopathology*. Feb 1981. v. 71 (2). p. 167-170. ill. 28 ref. (NAL Call No.: 464.8 P56).

0364

Effects of fumigation on soil pathogens and beneficial microorganisms.
James, R.L. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 29-34. Includes references. (NAL Call No.: DNAL aSD11.A42).

0365

Effects of fumigation, Temik, and Ridomil treatments on establishment of trees in replanted orchards, 1984-85.
FNETD. Rosenberger, D.A. Meyer, F.W.; Concklin, M.E.C.; Smith, W.S. s.l. : The Society. *Fungicide and nematicide tests : results - American Phytopathological Society*. 1986. v. 41. p. 3. (NAL Call No.: DNAL 464.9 AM31R).

0366

Effects of metam-sodium applied by drip irrigation on root-knot nematodes, Pythium ultimum, and Fusarium sp. in soil and on carrot and tomato roots.
PLDIDE. Roberts, P.A. Magyarosy, A.C.; Matthews, W.C.; May, D.M. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. Mar 1988. v. 72 (3). p. 213-217. Includes references. (NAL Call No.: DNAL 1.9 P69P).

(PLANT DISEASES - FUNGAL)

0367

Effects of moisture, chloropicrin, and methyl bromide singly and in mixtures on sclerotia of *Sclerotium rolfsii* and *Verticillium albo-atrum*. Munnecke, D.E. Kolbezen, M.J.; Bricker, J.L. St. Paul, Minn., American Phytopathological Society. *Phytopathology*. Sept 1982. v. 72 (9). p. 1235-1238. 14 ref. (NAL Call No.: 464.8 P56).

0368

Effects of open-air fumigation with sulphur dioxide on the occurrence of fungal pathogens in winter cereals.

PHYTAJ. McLeod, A.R. St. Paul, Minn. : American Phytopathological Society. *Phytopathology*. Jan 1988. v. 78 (1). p. 88-94. Includes references. (NAL Call No.: DNAL 464.8 P56).

0369

The effects of pathogen numbers and tillage on root disease severity, root length, and seed yields in green peas.

PLDIDE. Kraft, J.M. Wilkins, D.E. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. Nov 1989. v. 73 (11). p. 884-887. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0370

Effects of soil fumigation and cover crops on potential pathogens, microbial activity, nitrogen availability, and seedling quality in conifer nurseries.

PHYTA. Hansen, E.M. Myrold, D.D.; Hamm, P.B. St. Paul, Minn. : American Phytopathological Society. In three forest tree nurseries of the Pacific Northwest, fall fumigation with chloropicrin or dazomet led to an immediate increase in total microbial respiration and nitrogen availability, but levels were comparable to those in unfumigated plots when tree seedlings were sown in the next spring. Population densities of *Fusarium* spp. and *Pythium* spp. in fumigated plots were reduced dramatically and stayed significantly below those in unfumigated plots throughout the 2-yr crop cycle. Grass or legume cover crops increased pathogen population densities over those in bare, fallow plots before fumigation, and the trend continued throughout the crop cycle in unfumigated plots. At the end of the study, population densities of *Fusarium* in fallow, unfumigated plots were comparable to those in cover-cropped, fumigated plots. Seedling mortality was lower, and surviving seedlings were larger and more uniform on fallow and fumigated plots than on cover-cropped or unfumigated plots. *Phytopathology*. Aug 1990. v. 80 (8). p. 698-704. Includes references. (NAL Call No.: DNAL 464.8 P56).

0371

Effects of soil fumigation and foliar fungicides on grain yield of hard red winter wheat, 1980 (Wheat (*Triticum aestivum*), powdery mildew; *Erysiphe graminia* f.sp. *tritici*, *Septoria* blight; *Septoria nodorum*, *Septoria tritici*).

Frank, J.A. Cole, H. Jr.; Marshall, H.G. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1981. v. 36. p. 111-112. (NAL Call No.: 464.9 AM31R).

0372

Effects of soil fumigation and foliar fungicides on powdery mildew, *Septoria* blight, and grain yield of wheat, 1980 (Wheat (*Triticum aestivum*), powdery mildew; *Erysiphe graminia* f.sp. *tritici*, *Septoria* blight; *Septoria nodorum*, *Septoria tritici*).

Frank, J.A. Cole, H. Jr.; Marshall, H.G. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1981. v. 36. p. 112. (NAL Call No.: 464.9 AM31R).

0373

Effects of soil fumigation on conifer seedling production at the USDA Forest Service nursery, Coeur d'Alene, Idaho /by R.L. James, S. Metzger, C.J. Gilligan.

James, Robert L. Gilligan, Carma J. Missoula, Mont. : U.S. Dept. of Agriculture, Forest Service, Northern Region, 1990. Caption title. ~ "May 1990.". 18 p. ; 28 cm. Includes bibliographical references (p. 7-9). (NAL Call No.: DNAL aSD11.U585 no.90-11).

0374

Effects of soil fumigation, rotation, and nitrogen on yield, petiole N03-N, and verticillium wilt of potatoes (incited by *Verticillium albo-atrum*, *Verticillium dahliae*). O'Sullivan, J. Reyes, A.A. Alexandria, Va., The Society. *Journal of the American Society for Horticultural Science*. Nov 1980. v. 105 (6). p. 809-812. 12 ref. (NAL Call No.: 81 S012).

0375

Effects of soil fumigation with methyl bromide and chloropicrin on root health and yield of strawberry.

PLDIDE. Yuen, G.Y. Schroth, M.N.; Weinhold, A.R.; Hancock, J.G. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. Apr 1991. v. 75 (4). p. 416-420. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0376

Efficacy of methyl bromide-chloropicrin and ethylene dibromide-chloropicrin mixtures for control of nematodes (*Paratrichodorus* (N.) christiei, *Meloidogyne incongnita*) and *Verticillium* wilt of tomato (*Verticillium albo-atrum*).

Overman, A.J. Jones, J.P. s.l., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. 1980 (pub 1981). v. 93. p. 248-250. 20 ref. (NAL Call No.: 81 F66).

0377

Efficacy of soil fumigants in control of *Cylindrocladium* black rot (CBR) of peanut in Virginia, 1981 (Peanut (*Arachis hypogaea* 'Forigiant'), *Cylindrocladium* black rot; *Cylindrocladium crotalariae*).

Phipps, P.M. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1982. v. 37. p. 96. (NAL Call No.: 464.9 AM31R).

0378

Efficacy of various fumigants in the eradication of decay fungi implanted in Douglas-fir timbers.

PHYTAJ. Eslyn, W.E. Highley, T.L. St. Paul, Minn. : American Phytopathological Society. Phytopathology. May 1985. v. 75 (5). p. 588-592. ill. Includes 13 references. (NAL Call No.: DNAL 464.8 P56).

0379

Endomycorrhizal status of certified strawberry nursery stock.

JOSHB. Robertson, W.J. Boyle, C.D.; Brown, H.L. Alexandria, Va. : The Society. Journal of the American Society for Horticultural Science. July 1988. v. 113 (4). p. 525-529. Includes references. (NAL Call No.: DNAL 81 S012).

0380

Etiology and control of seed decay and preemergence damping-off of chickpea by *Pythium ultimum*.

PLDIDE. Kaiser, W.J. Hannan, R.M. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1983. v. 67 (1). p. 77-81. ill. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0381

Evaluating potential decay control agents with a small block test.

WO0FAJ. Corden, M.E. Morrell, J.J. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Oct 1988. v. 20 (4). p. 477-486. Includes references. (NAL Call No.: DNAL TA419.W6).

0382

Evaluation of deep-chiseled anhydrous ammonia as a control for *Phymatotrichum* root rot of cotton (*Phymatotrichum omnivorum*, soil fumigation, deep chisel plowing).

Rush, C.M. Lyda, S.D. St. Paul, Minn. : American Phytopathological Society. Plant disease. Apr 1984. v. 68 (4). p. 291-293. Includes references. (NAL Call No.: 1.9 P69P).

0383

Evaluation of row treatments with soil fumigants for control of *Cylindrocladium* black rot (CBR) of peanut, 1984.

FNETD. Phipps, P.M. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 153. (NAL Call No.: DNAL 464.9 AM31R).

0384

Evaluation of soil fumigants and application methods for the control of *Fusarium* (*Oxysporum* *niveum*) wilt of watermelon (Florida).

Hopkins, D.L. SEA. Elmstrom, G.W. Beltsville, Md., The Administration. Plant disease reporter. United States. Dept. of Agriculture. Science and Education Administration. Dec 1979. v. 63 (12). p. 1003-1006. ill. 8 ref. (NAL Call No.: 1.9 P69P).

0385

Evaluation of soybean seed treatment fungicides in fumigated and non-fumigated soil, 1980 (*Soybean* (*Glycine max* 'Williams'), pre- and postemergence damping-off).

Ferris, R.S. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1981. v. 36. p. 162. (NAL Call No.: 464.9 AM31R).

0386

Fumigants control decay in timbers.

Washington, D.C. : The Service. Engineering field notes - United States Forest Service, Engineering Staff. Mar/Apr 1988. v. (20). p. 41-42. ill. (NAL Call No.: DNAL aSD388.A1U52).

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0387

Fumigants in bedded rows for tomato root knot and Verticillium wilt, 1985.

FNETD. Shoemaker, P.B. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 82. (NAL Call No.: DNAL 464.9 AM31R).

0388

Fumigating may cut Texas root rot losses.

Thacker, G. Silvertooth, J. Spokane, Wash. : The Journal. Arizona farmer-stockman. Apr 1989. v. 68 (4). p. 37. ill. (NAL Call No.: DNAL 6 AR44).

0389

Fumigation and fungicide control trials for damping-off and root rot of snap beans (*Fusarium* spp., *Pythium* spp. and *Rhizoctonia*).

Pieczarka, D.J. Ozaki, H.Y. Belle Glade, Fla., The Center. Belle Glade AREC research report; EV - Florida University, Agricultural Research and Education Center. Apr 1980. Apr 1980. (1980-11). 3 p. (NAL Call No.: 100 F663).

0390

Fumigation effect on soilborne pathogens, mycorrhizae, and growth of Douglas-fir seedlings.

Tanaka, Y. Russell, K.W.; Linderman, R.G. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a Meeting of the Combined Western Forest Nursery Council and Intermountain Nursery Association, August 12-15, 1986, Tumwater, Washington. Dec 1986. (137). p. 147-152. Includes references. (NAL Call No.: DNAL aSD11.A42).

0391

Fumigation for control of foliar and fruit disease of tomato, 1977 (Tomato (*Lycopersicon esculentum* 'Campbell 1327'), early blight; *Alternaria solani*, Septoria blight; *Septoria lycopersici*, anthracnose; *Colletotrichum phomoides*).

Potter, H.S. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1980. v. 35. p. 95. (NAL Call No.: 464.9 AM31R).

0392

Good news--a possible easy cure for chalkbrood (*Ascophaera apis*, honeybee fungus, acetic acid fumigation, benomy).

Thurber, P.F. Hamilton, Ill. : Dadant & Sons. The American bee journal. Sept 1984. v. 124 (9). p. 658-659. Includes 5 references. (NAL Call No.: 424.8 AM3).

0393

How soil fumigation benefits the California strawberry industry (Weeds and Verticillium wilt control).

Wilhelm, S. Paulus, A.O. St. Paul, Minn., American Phytopathological Society. Plant disease. Mar 1980. v. 64 (3). p. 264-270. ill. 20 ref. (NAL Call No.: 1.9 P69P).

0394

Impact of fungicide seed treatments on *Rhizoctonia* root rot, take-all, eyespot, and growth of winter wheat.

PLDIDE. Smiley, R.W. Wilkins, D.E.; Klepper, E.L. St. Paul, Minn. : American Phytopathological Society. Plant disease. Oct 1990. v. 74 (10). p. 782-787. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0395

Influence of disease management strategies on the production of white spruce in a forest tree nursery.

FOSCA. Enebak, S.A. Palmer, M.A.; Blanchette, R.A. Bethesda, Md. : Society of American Foresters. In a forest tree nursery dazomet, captan, thiram, captan-thiram combination, or silica sand did not reduce populations of three soilborne fungi. Preemergence mortality was greatest in nontreated plots, (56%) and least in plots treated with dazomet (46%). Nontreated plots had the most post-emergence damping off, (15%) and silica sand the least (3%). *Rhizoctonia solani* (AG-1) was isolated from 52% of damped-off seedlings collected while *Pythium* spp., *Fusarium* spp. and *Cylindrocladium* spp. were recovered from 24%, 23%, and 1% of the seedlings, respectively. Seedling mortality from May 18 to September 23, 1986, ranged from 28% in the dazomet plots to 61% in nontreated plots. At the end of the first growing season, plots treated with dazomet had significantly more seedlings than any other treatment. The incidence of stunted seedlings was greatest in plots treated with dazomet and least when seed was covered with silica sand. Silica sand or thiram treatments produced seedlings with the greatest total dry weights. Forest science. Dec 1989. v. 35 (4). p. 1006-1013. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0396

Influence of flutolanil and tolclofos-methyl on root and culm diseases of winter wheat.

PLDIDE. Smiley, R.W. Uddin, W.; Ott, S.; Rhinhart, K.E.L. St. Paul, Minn. : American Phytopathological Society. Plant disease. Oct 1990. v. 74 (10). p. 788-791. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0397

Influence of preplant soil fumigants on growth and survival of Delicious apple trees planted on a peach tree short life site (Nematoda, Fungi, Georgia).

Miller, S.S.GARBB. Athens : The Stations. Research bulletin - University of Georgia, Experiment Stations. Apr 1982. Apr 1982. (274). 7 p. 12 ref. (NAL Call No.: S51.E2).

0398

Influence of soil fumigation on root rot incidence and yield of beans grown on raised ridges, 1981 (Bean (snap) (*Phaseolus vulgaris* 'Checkmate'), root rot fungi; *Fusarium solani* f. *phaseoli*, *Pythium ultimum*, *Rhizoctonia solani*, *Thielaviopsis basicola*, lesion nematode; *Pratylenchus penetrans*).

Abawi, G.S. Crosier, D.C.; Cobb, A.C. (s.l.). The Society. Fungicide and nematocide tests; results - American Phytopathological Society. 1982. v. 37. p. 188. (NAL Call No.: 464.9 AM31R).

0399

The influence of soil fumigation on strawberry yield and economics in black root rot infested fields.

AAREEZ. Wolfe, D. Hartman, J.R.; Brown, G.R.; Strang, J. New York, N.Y. : Springer. This study was designed to determine if the cost of soil fumigation would be recovered in the first year of production when yield potential was being limited by the strawberry root rot complex. Yield, stand counts, leaf mineral nutrient levels, and nematode population levels, were evaluated for each of three treatments consisting of 67% methyl bromide plus 33% chloropicrin (MC33), 98% methyl bromide plus 2% chloropicrin (MC2) and a nonfumigated control. Yield was significantly greater in the fumigated plots than the control plots but did not differ significantly between the two fumigants. Stand counts and leaf mineral nutrient levels were not found to vary significantly among treatments. Compared with the control, fewer plant parasitic nematodes were observed in plots treated with either MC33 or MC2. Nematode population differences between the MC33 and MC2 treatments were not evident. The cause of the black root rot complex was not determined from this study. Soil fumigation with either fumigant increased yields enough to justify this practice economically. Applied agricultural research. Winter 1990. v. 5 (1).

p. 17-20. Includes references. (NAL Call No.: DNAL S539.5.A77).

0400

Influence of soil treatments on growth and yield of wheat and implications for control of *Pythium* root rot.

PHYTAJ. Cook, R.J. Sitton, J.W.; Haglund, W.A. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Aug 1987. v. 77 (8). p. 1192-1198. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

0401

Insensitivity of thick-walled oospores of *Pythium ultimum* to fungicides, methyl bromide, and heat.

PHYTAJ. Stasz, T.E. Martin, S.P. St. Paul, Minn. : American Phytopathological Society. Thick-walled oospores, thin-walled, quiescent oospores, and quiescent sporangia of *Pythium ultimum* were treated for 24 hr with up to 1,000 mg of a.i./L of the fungicides captan, etridiazol, fenaminosulf, maneb, and thiram. Propagules also were treated with heat at 50 and 70 C for 30 min, and with methyl bromide gas at a concentration of 60 mg/L for up to 6 hr. Thick-walled oospores were killed only by heat at 70 C; their viability was reduced by heat at 50 C and by high levels of etridiazol, but was not affected by captan, fenaminosulf, maneb, methyl bromide, or thiram. In contrast, thin-walled oospores and sporangia, when treated while quiescent, were killed by heat at 50 or 70 C, by captan, thiram, or etridiazol at 100-500 mg a.i./L, by maneb at 1,000 mg of a.i./L, and by methyl bromide at 60 mg/L for 6 hr. Surprisingly, quiescent thin-walled oospores and sporangia were not greatly affected by fenaminosulf at up to 1,000 mg of a.i./L. However, when treated during germination, oospores and sporangia were killed by low levels of all toxicants tested, including fenaminosulf. Insensitivity of thick-walled oospores to fungicides and heat may result in the reappearance of germinable propagules in treated soils due to conversion of these survival structures to the thin-walled condition. Phytopathology. Nov 1988. v. 78 (11). p. 1409-1412. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

0402

Interaction among mycorrhizae, soil solarization, metalaxyl, and plants in the field.

PLDIDE. Afek, U. Menge, J.A.; Johnson, E.L.V. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1991. v. 75 (7). p. 665-671. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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0403

Management of Fusarium wilt, Fusarium crown rot, Verticillium wilt (race 2), southern blight, and root-knot of tomato on fine sandy soils.

Jones, J.P. Overman, A.J. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986. v. 98. p. 229-231. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0404

Managing soilborne pathogens of white pine in a forest nursery.

PLDIDE. Enebak, S.A. Palmer, M.A.; Blanchette, R.A. St. Paul, Minn. : American Phytopathological Society. Plant disease. Mar 1990. v. 74 (3). p. 195-198. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0405

Methyl bromide eradication of the oak wilt fungus from red and white oak logs.

FPJDA. MacDonald, W.L. Schmidt, E.L.; Harner, E.J. Madison, Wis. : Forest Products Research Society. Forest products journal. July/Aug 1985. v. 35 (7/8). p. 11-16. ill. Includes 9 references. (NAL Call No.: DNAL 99.9 F7662J).

0406

Methyl bromide fumigation of containers filled with growing media.

Garren, T.R. Landis, T.D.; Campbell, S.J. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 43-48. ill. Includes references. (NAL Call No.: DNAL aSD11.A42).

0407

Methyl bromide treatment of oak wilt infected logs: Laboratory and preliminary field fumigations (Ceratomyces fagacearum).

Schmidt, E.L. Ruetze, M.M.; French, D.W. Madison, Wis., Forest Products Research Society. Forest products journal. Mar 1982. v. 32 (3). p. 46-49. Includes 7 ref. (NAL Call No.: 99.9 F7662J).

0408

Movement and persistence of chloropicrin fumigant in western redcedar poles (Treatment for wood decaying fungi).

Scheffer, T.C. Inwards, R.; Graham, R.D. Madison, Wis., Forest Products Research Society. Forest products journal. May 1982. v. 32 (5). p. 33-36. Includes 3 ref. (NAL Call No.: 99.9 F7662J).

0409

Movement of chloropicrin or methylisothiocyanate through the boles of Douglas-fir trees.

FOSCA. Morrell, J.J. Newbill, M.A. Bethesda, Md. : Society of American Foresters. Movement of the wood fumigants chloropicrin and methylisothiocyanate (MITC) through living Douglas-fir trees was evaluated at selected heights above treatment holes 18 and 42 months after treatment. Wood-sample extracts were analyzed by gas chromatography. After 18 months, concentrations of MITC were 10 to 30 times higher than those of chloropicrin. Concentrations of both chemicals were higher in heartwood than in the wetter sapwood. After 42 months, concentrations of both chemicals were much higher and apparent at greater distances from the point of application. MITC concentrations were again higher than those of chloropicrin, which has a lower water solubility that may limit diffusion. Both chemicals moved through Douglas-fir heartwood as far as 4 m from the application point over the 42 months. Forest science. Mar 1990. v. 36 (1). p. 192-195. ill. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0410

Occurrence of fusarium yellows of celery caused by Fusarium oxysporum f. sp. apii race 2 in New York and its control.

PLDRA. Awuah, R.T. Lorbeer, J.W.; Ellenbrock, L.A. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1986. v. 70 (12). p. 1154-1158. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0411

Options in controlling soilborne pests.

McElroy, F.D. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a Meeting of the Combined Western Forest Nursery Council and Intermountain Nursery Association, August 12-15, 1986, Tumwater, Washington. Dec 1986. (137). p. 135-138. Includes references. (NAL Call No.: DNAL aSD11.A42).

0412

Performance of gelatin-encapsulated methylisothiocyanate in Douglas-fir poles.
 FPJDA. Morrell, J.J. Zahora, A.R.; Corden, M.E.; Newbill, M.A. Madison, Wis. : Forest Products Research Society. The ability of gelatin-encapsulated methylisothiocyanate (MITC) to eliminate Basidiomycetes and prevent reinfestation by these fungi was evaluated in Douglas-fir poles treated with pentachlorophenol or chromated copper arsenate. The poles had been in service for 9 to 15 years and contained active Basidiomycete colonies. Fumigant treatment resulted in rapid elimination of decay fungi with nearly complete elimination 2 years after fumigant application. Extra water, added at the time of application to accelerate gelatin breakdown, appeared to provide a slight improvement in fungal control after 1 year, but when sampling was prolonged, this effect was negligible. Gelatin encapsulation provides a highly effective method for safely containing MITC prior to application and does not appear to adversely affect fumigant performance. Forest products journal. July/Aug 1990. v. 40 (7/8). p. 37-40. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0413

Phytophthora cinnamomi root rot in Pinus nurseries soil fumigation and disease prevention by hygiene.
 Brown, B.N. Auburn, Ala.? : Orders, Dept. of Research Information, Auburn University, 1986? . Proceedings of the International Symposium on Nursery Management Practices for the Southern Pines, Montgomery, Alabama, August 4-9, 1985 / edited by David B. South. p. 507-514. Includes references. (NAL Call No.: DNAL SD397.P55I58 1985).

0414

Populations of soil fungi and root diseases of vegetables in Norfolk loamy sand soil treated with sodium azide and methyl bromide.
 Sumner, D.R. GA. Spivey, C.D.; Gay, J.D. Athens, Ga., The Stations. Research bulletin.Georgia. Experiment Stations. Oct 1979. Oct 1979. (244). 19 p. ill. 28 ref. (NAL Call No.: S51.E2).

0415

Pythium root rot: A barrier to yield of Pacific Northwest wheat.
 Cook, R.J. Haglund, W.A. Pullman : The Center. Research bulletin XB - Washington State University, Agricultural Research Center. 1982. (0913). 18 p. ill. Includes references. (NAL Call No.: DNAL S541.5.W2R47).

0416

Reducing internal and external decay of untreated Douglas-fir poles: a field test.
 FPJDA. Morrell, J.J. Smith, S.M.; Newbill, M.A.; Graham, R.D. Madison, Wis. : Forest Products Research Society. Forest products journal. Apr 1986. v. 36 (4). p. 47-52. Includes 24 references. (NAL Call No.: DNAL 99.9 F7662J).

0417

Reduction of Phellinus weirii inoculum in Douglas-fir stumps by the fumigants chloropicrin, Vorlex, or methylisothiocyanate.
 FOSCA. Thies, W.G. Nelson, E.E. Bethesda, Md. : Society of American Foresters. Forest science. June 1987. v. 33 (2). p. 316-329. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0418

Reinvasion of fumigated soil by Fusarium oxysporum f. sp. melonis (Causal agent of wilt of muskmelon, Cucumis melo var. reticulatus).
 Marois, J.J. PHYTA. Dunn, M.T.; Papavizas, G.C. St. Paul : American Phytopathological Society. Phytopathology. May 1983. v. 73 (5). p. 680-684. Includes references. (NAL Call No.: 464.8 P56).

0419

Report of the Soil Fungicide Committee-1990.
 BCOPB. Sciumbato, G.L. (comp.). Memphis, Tenn. : National Cotton Council of America. Proceedings - Beltwide Cotton Conferences. Paper presented at "Cotton Disease Council Meeting," Jan. 12, 1991, San Antonio, Texas. 1991. v. 1. p. 141-142. (NAL Call No.: DNAL SB249.N6).

0420

Response of pepper transplants to fall fumigation (decreased plant pathogens in the soil and the incidence of stem rot caused by Pythium aphanidermatum).
 McCarter, S.M. AR-SO. Campbell, G.M.; Johnson, A.W. St. Paul, Minn., American Phytopathological Society. Plant disease. June 1980. v. 64 (6). p. 566-568. ill. 9 ref. (NAL Call No.: 1.9 P69P).

0421

Response of sclerotia of Phymatotrichum omnivorum to five soil fumigants.
 BCOPB. Riggs, J.L. Lyda, S.D. Memphis, Tenn. : National Cotton Council and The Cotton Foundation. Proceedings - Beltwide Cotton Production Research Conferences. 1987. p. 46-47. Includes references. (NAL Call No.: DNAL

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SB249.N6).

0422

Response of soybeans and soybean pathogens to soil fumigation and foliar fungicide sprays.

Kittle, D.R. Gray, L.E. St. Paul, Minn., American Phytopathological Society. Plant disease. Mar 1982. v. 66 c (3). p. 213-215. Includes 20 ref. (NAL Call No.: 1.9 P69P).

0423

Role in Pythium in sugarcane stubble decline: effects on plant growth in field soil.

PHYTAJ. Hoy, J.W. Schneider, R.W. St. Paul, Minn. : American Phytopathological Society. Sugarcane plants grown in sugarcane field soil treated with methyl bromide or metalaxyl showed significant increases in several components of root and shoot growth as compared with plants treated with fosetyl-Al or grown in untreated field soil. Metalaxyl applied at two rates completely controlled root rot caused by *Pythium arrhenomanes* in a pathogenicity test. In field experiments, significant yield increases were obtained in ratoon crops in metalaxyl-treated plots compared with untreated plots of two sugarcane cultivars. Experimental results suggest that *P. arrhenomanes* functions as a cryptic pathogen and causes significant reductions in sugarcane plant growth in field soil. These findings are discussed with respect to a syndrome in sugarcane known as stubble decline. Phytopathology. Dec 1988. v. 78 (12,pt.2). p. 1692-1696. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

0424

The role of ethylene in anthracnose of cucumber, *Cucumis sativus*, caused by *Colletotrichum lagenarium*.

PHYTA. Biles, C.L. Abeles, F.B.; Wilson, C.L. St. Paul, Minn. : American Phytopathological Society. Cucumber (*Cucumis sativus*) seedlings pretreated with ethylene gas had 21% more anthracnose lesions than did controls, following inoculation with *Colletotrichum lagenarium*. Ethylene fumigation 24 hr after inoculation increased lesion size by 36%. Silver thiosulfate (0.1 mM), an inhibitor of ethylene action, decreased lesion number and lesion size. Silver thiosulfate did not inhibit germination, growth, or the sporulation capacity of *C. lagenarium*. However, scanning electron microscopy showed an inhibition of *C. lagenarium* conidial germination when silver thiosulfate (1 mM) was applied to the leaf surface. Increased ethylene production was observed after 3 days, followed by increased peroxidase activity at 6 days. Isoelectric focusing gels indicated that pI 4 and 6.5 isozymes were enhanced by the invading pathogen. Since ethylene failed to induce disease resistance and silver thiosulfate failed to induce susceptibility, it was concluded that ethylene-induced proteins, such

as peroxidase, do not play a role in limiting disease development in the cucumber-*C. lagenarium* system. However, ethylene action appears necessary for lesion development and senescence. Phytopathology. Aug 1990. v. 80 (8). p. 732-736. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

0425

Role of *Pratylenchus penetrans* in the potato early dying disease of Russet Burbank potato.

PHYTA. MacGuidwin, A.E. Rouse, D.I. St. Paul, Minn. : American Phytopathological Society. The interaction of *Pratylenchus penetrans* and *Verticillium dahliae* for symptom expression of potato early dying and yield and quality of tubers of Russet Burbank potato was evaluated in microplots and field plots. Soil was fumigated with metham sodium before being infested with varying population levels of the nematode and/or fungus. In the microplot study, low and high initial populations of *P. penetrans* (about 25 and 75/100 cm³ of soil) or *V. dahliae* (about 3 and 9 colony-forming units/g of dry soil) had no effect on number and fresh weight of tubers compared to the control. Combined infestations of both organisms reduced yields up to 20% but did not affect number of tubers compared to the control. Dry matter content of tubers was reduced by *V. dahliae* compared to the control regardless of presence or absence of the nematode. Foliar symptoms of potato early dying were caused by *V. dahliae* alone, but were more severe when nematodes were also present with *V. dahliae*. Estimates of percent defoliation at weekly intervals beginning 13 wk after planting until harvest were consistent with rating of symptoms at 13 wk after planting. In field experiments, initial populations of *P. penetrans* ranging from eight to 44 nematodes/100 cm³ of soil did not affect yield or quality of tubers compared to the control. Initial populations of *V. dahliae* alone reduced yield one year but not another. Regardless of the effect of the fungus alone, the combination of *V. dahliae* and *P. penetrans* reduced yield by as much as 36% and also reduced specific gravity compared to the control. The population dynamics of *P. penetrans* was not consistent among years of experiments; populations of this nematode were either decreased or not affected by *V. dahliae*. Phytopathology. Oct 1990. v. 80 (10). p. 1077-1082. Includes references. (NAL Call No.: DNAL 464.8 P56).

0426

Soil fumigants and fungicide drenches for control of root rot (*Fusarium oxysporum*) of loblolly pine seedlings (*Pinus taeda*).

Rowan, S.J. St. Paul, Minn., American Phytopathological Society. Plant disease. Jan 1981. v. 65 (1). p. 53-55. 10 ref. (NAL Call No.: 1.9 P69P).

0427

Soil fumigants for control of nematodes, Fusarium wilt, and Fusarium crown rot on tomato.

Overman, A.J. Jones, J.P. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. June 1985. v. 97. p. 194-197. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0428

Soil fumigants for root rot control (Phytophthora cinnamomi, in avocado groves).

Zentmyer, G.A. Vista, Calif. : Rancher Pub. Avocado grower. Oct 1982. v. 6 (10). p. 40-41. (NAL Call No.: SB379.A9A9).

0429

Soil fumigants for tomato production on Rockdale soils.

McSorley, R. McMillan, R.T. Jr.; Parrado, J.L. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986. v. 98. p. 232-237. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0430

Soil fumigation at J. Herbert Stone Nursery.

Scholtes, J.R. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 35-37. (NAL Call No.: DNAL aSD11.A42).

0431

Soil fumigation controls sudden wilt of melon (Pythium fungus infections, California).

Munnecke, D.E. Laemmlen, F.F.; Bricker, J. Berkeley : The Station. California agriculture - California Agricultural Experiment Station. May/June 1984. v. 38 (5/6). p. 8-9. ill. (NAL Call No.: 100 C12CAG).

0432

Soil fumigation, cover cropping, and organic soil amendments: their effect on soil-borne pathogens and the target seedling.

Hamm, P.B. Hansen, E.M. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Dec 1990. (200). p. 174-180. Includes references. (NAL Call No.: DNAL aSD11.A42).

0433

Soil fumigation evaluation for control of Verticillium wilt and black dot of potatoes, 1979 (Potato (Solanum tuberosum 'Russet Burbank'), Verticillium dahliae, black dot; Colletotrichum atramentarium).

Powelson, M.L. (s.l.), The Society. Fungicide and nematicide tests; results - American Phytopathological Society. 1981. v. 36. p. 71. (NAL Call No.: 464.9 AM31R).

0434

Soil fumigation in southern United States forest tree nurseries.

Cordell, C.E. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 52-57. ill. Includes references. (NAL Call No.: DNAL aSD11.A42).

0435

Soil fumigation in Southern United States forest tree nurseries.

Cordell, C.E. Kelley, W.D. Auburn, Ala.? : Orders, Dept. of Research Information, Auburn University, 1986? . Proceedings of the International Symposium on Nursery Management Practices for the Southern Pines, Montgomery, Alabama, August 4-9, 1985 / edited by David B. South. p. 496-504. ill. Includes references. (NAL Call No.: DNAL SD397.P55I58 1985).

0436

Soil fumigation via drip irrigation under full-bed mulch culture for row crops (Control of rootknot nematodes Meloidogyne incognita, Verticillium wilt, Verticillium albo-atrum).

Overman, A.J. (S.l.) : The Society. Proceedings - Soil and Crop Science Society of Florida. 1982. v. 41. p. 153-155. Includes references. (NAL Call No.: 56.9 S032).

0437

Soil matric potential effects on changes in wall morphology, germination, and lysis of oospores of Pythium ultimum.

PHYTA. Johnson, L.F. Qian, P.; Ferriss, R.S. St. Paul, Minn. : American Phytopathological Society. Thick-walled oospores of Pythium ultimum in agar films on glass slides were incubated in soil for 84 days. In soil with matric potentials of -0.03 to -0.30 MPa, almost all of the thick-walled oospores converted to thin-walled oospores, and 91% of these lysed. In soil near saturation (0 MPa) and in much dryer soil (-1.50 MPa), 82 and 62% of the oospores remained thick-walled, respectively.

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Occasionally, oospores with attached germ tubes were observed but not in soil with matric potentials of 0, -0.7, or -1.5 MPa. Oospores were germinated in corn meal agar films on glass slides and then were killed by fumigation with propylene oxide, aerated, and placed in soil. After 16 days of incubation, 98% of the germ tubes had disintegrated and were no longer visible. Based on rate of visual disappearance in soil of germ tubes killed with propylene oxide, calculations were made for the quantity of oospores buried in soil at different moisture levels that lysed directly and for those that germinated before lysis. As an average for soil with moisture levels of -0.03 to -0.30 MPa and soil with fluctuating moisture levels, it was calculated that 89.5% of the oospores lysed directly and 1.5% germinated. *Phytopathology*. Dec 1990. v. 80 (12). p. 1357-1361. Includes references. (NAL Call No.: DNAL 464.8 P56).

0438

Soil solarization, reaction, and fumigation effects on double-cropped tomato under full-bed mulch.

Overman, A.J. Jones, J.P. s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986 (pub. 1987). v. 99. p. 315-318. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0439

Soils suppressive to black root rot of burley tobacco, caused by *Thielaviopsis basicola*.

PHYTA. Meyer, J.R. Shew, H.D. St. Paul, Minn. : American Phytopathological Society. Soils suppressive to black root rot were detected in fields in which the pathogen was present but in which little or no disease had developed on susceptible cultivars of burley tobacco. Suppressive soils were characterized by low base saturation, low calcium, exchangeable aluminum levels of 1 meq/100 g of soil or higher, and soil pH less than 5. Suppressiveness was confirmed under controlled environmental conditions with fumigated field soils reinfested with *Thielaviopsis basicola*. Isolates of *T. basicola* from suppressive soils caused black root rot when placed in conducive soil, indicating that the absence of disease was not due to differences in pathogen virulence. The mechanism of suppression was not biotic; autoclaving soil had no effect on suppressiveness, and transfer of suppressive soil to conducive soil (fumigated soil; 1:9, by volume) did not induce suppressiveness. Soil calcium level was not the mechanism of suppression because amending suppressive soils with calcium hydroxide nullified suppressiveness and amending soils with calcium sulfate did not. Disease developed in acidified conducive soil only if exchangeable aluminum levels were low. The acidification treatments had no effect on the inoculum density of the fungus, and the survival of the chlamydospores of *T. basicola* was not affected by the soil or soil treatments. Mechanisms of soil suppression

to black root rot on burley tobacco are abiotic and dependent on the interrelationships among soil pH, base saturation, and exchangeable aluminum. *Phytopathology*. Sept 1991. v. 81 (9). p. 946-954. Includes references. (NAL Call No.: DNAL 464.8 P56).

0440

Spatial patterns of *Verticillium dahliae* propagules in potato field soils of Oregon's Columbia Basin.

PLDIDE. Johnson, K.B. Apple, J.D.; Powelson, M.L. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1988. v. 72 (6). p. 484-488. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0441

Sporulation and survival of conidia of *Cephalosporium gramineum* as influenced by soil pH, soil matric potential, and soil fumigation.

PHYTA. Specht, L.P. Murray, T.D. St. Paul, Minn. : American Phytopathological Society. In growth-chamber studies conducted at 5 and 15 C, sporulation of *Cephalosporium gramineum* on artificially colonized oat kernels on soil and survival of conidia in soil were significantly greater at soil pH 4.7 than at 5.7-7.5. Conidial survival also was greater at pH 7.5 than at 5.7-6.7, which produced a significant curvilinear relationship between soil pH and conidial survival. Sporulation of *C. gramineum* on oat kernels increased, whereas conidial survival decreased, as soil matric potential increased from -0.06 to -0.01 MPa. Survival of conidia always was high in soil at -0.06 MPa regardless of soil pH, but was low and influenced by pH at matric potentials of -0.03 and -0.01 MPa. Pretreatment of moderately acid (pH 5.5) soil with chloropicrin (0.2 ml/kg of moist soil) resulted in large reductions in total population densities of fungi and actinomycetes (but not bacteria) and in a significant increase in conidial survival. *Phytopathology*. July 1989. v. 79 (7). p. 787-793. Includes references. (NAL Call No.: DNAL 464.8 P56).

0442

Strawberry cultivar yield response to soil fumigation.

Strang, J.G. Archbold, D.D.; Hartman, J.R.; Hendrix, J.W. s.l. : North American Strawberry Growers Association. Advances in strawberry production. Spring 1985. v. 4. p. 36-38. Includes 15 references. (NAL Call No.: DNAL SB385.A34).

(PLANT DISEASES - FUNGAL)

0443

Survival of Douglas-fir injected with the fumigants chloropicrin, methylisothiocyanate or vorlex.

NOSCA. Thies, W.G. Nelson, E.E. Pullman, Wash. : Washington State University Press. Northwest science. Feb 1987. v. 61 (1). p. 60-64. Includes references. (NAL Call No.: DNAL 470 N81).

0444

Sweetgum seedling growth and vesicular-arbuscular mycorrhizal development as affected by soil fumigation.

SSSJD4. Snyder, C.S. Davey, C.B. Madison, Wis. : The Society. Soil Science Society of America journal. July/Aug 1986. v. 50 (4). p. 1047-1051. Includes references. (NAL Call No.: DNAL 56.9 S03).

0445

Time and materials needed to survey, inject systematic fungicides, and install root-graft barriers for Dutch elm disease management.

Cannon, W.N. Jr. Barger, J.H.; Kostichka, C.J. Broomall, Pa. : The Station. USDA Forest Service Research Paper NE - United States, Northeastern Forest Experiment Station. 1986. (585). 6 p. Includes references. (NAL Call No.: DNAL A99.9 F7622UN).

0446

Tobacco stunt, a disease of burley tobacco controlled by soil fumigants.

PLDIDE. Hendrix, J.W. Csinos, A.S. St. Paul, Minn. : American Phytopathological Society. Plant disease. May 1985. v. 69 (5). p. 445-447. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0447

Trichoderma species from fumigated Douglas-fir roots decayed by Phellinus weirii.

MYCOAE. Nelson, E.E. Goldfarb, B.; Thies, W.G. Bronx, N.Y. : The New York Botanical Garden. Mycologia. May/June 1987. v. 79 (3). p. 370-374. Includes references. (NAL Call No.: DNAL 450 M99).

0448

Use of Metam-sodium and Dazomet fumigants.

McElroy, F.D. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a Meeting of the Combined Western Forest Nursery Council and Intermountain Nursery Association, August

12-15, 1986, Tumwater, Washington. Dec 1986. (137). p. 139-146. (NAL Call No.: DNAL aSD11.A42).

0449

Using fumigants to control interior decay in waterfront timbers (Vapam, chloropicrin).

Highley, T.L. Eslyn, W.E. Madison, Wis., Forest Products Research Society. Forest products journal. Feb 1982. v. 32 (2). p. 32-34. ill. Includes 9 ref. (NAL Call No.: 99.9 F7662J).

0450

Utility of cultivar resistance and row treatments with soil fumigants in control of Cylindrocladium black rot (CBR) of peanut, 1985.

FNETD. Phipps, P.M. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 107-108. (NAL Call No.: DNAL 464.9 AM31R).

0451

Volatile emissions from Douglas-fir heartwood treated with Vapam or methylisothiocyanate.

FPJ0A. Morrell, J.J. Lebow, S.T. Madison, Wis. : Forest Products Research Society. Fumigants, which play an important role in arresting and preventing decay of wood exposed to the weather, have recently been used to control decay in building timbers. The possibility exists that chemicals could migrate through the wood and be emitted inside buildings, thus posing a health hazard. Emission rates from blocks of Douglas-fir heartwood, treated with Vapam or methylisothiocyanate (MIT), were measured by placing the blocks in tanks under a stable air-flow and then analyzing air samples by gas chromatography at regular intervals. Three sulfur compounds were detected: carbon disulfide, carbonyl sulfide, and MIT. Emissions from wood treated with MIT were generally higher than those from Vapam-treated wood. Although our results indicated that emissions were detectable for at least 1 year after treatment, levels were extremely low and should not be a problem in storage buildings or in factories where air exchange is high. Fumigant treatment of wood used in tightly sealed buildings that are continually inhabited is not recommended. Forest products journal. Feb 1989. v. 39 (2). p. 41-44. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0452

Yield response of corn hybrids and inbred lines to phylloplane treatment with mycopathogenic fungi.

CRPSAY. Vakili, N.G. Bailey, T.B. Jr. Madison, Wis. : Crop Science Society of America. This study was part of a larger investigation on the

(PLANT DISEASES - FUNGAL)

biological control of stalk rot of corn (*Zea mays* L.) through application of mycopathogenic fungi on above-ground surface (phylloplane) of the corn plant conducted at Iowa State University, Ames, IA. The objectives were to determine if grain yield is an effective trait for testing the interaction of selected mycopathogenic fungi with corn genotypes and whether the application of mycopathogens to the corn phylloplane had an effect on yield. Seven corn hybrids and nine inbred lines were planted in a Spillville clay loam (fine-loamy, mixed mesic Cumulic Hapludoll) with three cultural histories: oat (*Avena sativa* L.)-corn-soybean (*Glycine max* (L.) Merr. rotation, continuous corn cultivation, and fumigation. Plants were treated in the phylloplane with aqueous spore suspension of mycopathogens *Gliocladium roseum* (Link) Bainier, *Gonatobotrys simplex* Corda, and *Sphaeronaemella helvella* (Karsten) Seeler, and water as control. Hybrid yields were not affected by the treatments, whereas inbred yields differed significantly. Fumigation of the soil with methyl isothiocyanate resulted in a significant response by inbreds to treatment with mycopathogens, which was primarily due to *G. roseum*. Differences in the yields of the inbreds planted in corn-soybean-oat rotation were nonsignificant. Variation in the yield of the inbreds indicated that there was a highly significant interaction between inbred genotypes and mycopathogens in continuous corn culture and in fumigated soils. Inbreds B73 and Va26 had the most varied responses to the mycopathogens, whereas B85 and W629A had the least. Selection and breeding of inbreds with high yield response to mycopathogens could result in genotypes, that, in the presence of a compatible mycopathogen, would suppress stalk rot development and have greater yield potentials. Crop science. Jan/Feb 1989. v. 29 (1). p. 183-190. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

PLANT DISEASES - BACTERIAL

0453

Control of nematodes and soil-borne diseases in Florida potatoes with aldicarb and 1,3-D.
JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 775-778. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0454

Control of sweetpotato *Streptomyces* pox with fumigation and changes in soil pH, 1981 (*Streptomyces ipomoea*, *Ipomoea batatas*).
Averre, C.W.FNETD. (s.l.) : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1983. v. 38. p. 108. (NAL Call No.: 464.9 AM31R).

0455

Effect of soil fumigation and alternate-year seeding on weed control, bacterial spot incidence, and yield of pepper transplants.
Jaworski, C.A. AR-SO. McCarter, S.M.; Glaze, N.C. Alexandria, Va., American Society for Horticultural Science. HortScience. Oct 1980. v. 15 (5). p. 650-652. 11 ref. (NAL Call No.: SB1.H6).

0456

Effects of soil fumigants and aldicarb on bacterial wilt and root-knot nematodes in potato.
JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 681-688. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0457

Effects of soil fumigants and aldicarb on nematodes, tuber quality, and yield in potato.
JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 767-774. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0458

Effects of two-year crop rotations and cultivar resistance on bacterial wilt in flue-cured tobacco.
PLDIDE. Melton, T.A. Powell, N.T. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1991. v. 75 (7). p. 695-698. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0459

Survival of *Xanthomonas campestris* pv. *citri* in citrus plant debris and soil in Florida and Argentina.
PLDIDE. Graham, J.H. McGuire, R.G.; Miller, J.W. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1987. v. 71 (12). p. 1094-1098. Includes references. (NAL Call No.: DNAL 1.9 P69P).

PLANT DISEASES - VIRAL

0460

Aluminum-surfaced mulch: an approach to the control of tomato spotted wilt virus in solanaceous crops.

PLDIDE. Greenough, D.R. Black, L.L.; Bond, W.P. St. Paul, Minn. : American Phytopathological Society. Plant disease. Oct 1990. v. 74 (10). p. 805-808. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0461

Comparison of 1,3-dichloropropene and methyl bromide for control of Xiphinema index and grapevine fanleaf degeneration complex.

AJEVA. Raski, D.J. Goheen, A.C. Davis, Calif. : American Society of Enologists. American journal of enology and viticulture. 1988. v. 39 (4). p. 334-336. Includes references. (NAL Call No.: DNAL 390.9 AM33).

0462

Control of nematodes and soil-borne diseases in Florida potatoes with aldicarb and 1,3-D.

JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 775-778. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0463

Effects of antiviral compounds on symptoms and infectivity of cowpea chlorotic mottle virus (Vigna unguiculata, Glycine max, 2-thiouracil, ribavirin, amantadine, formycin, methisazone, methyl bromide with chloropicrin).

Mancino, L.J.C. Agrios, G.N. St. Paul, Minn. : American Phytopathological Society. Plant disease. Mar 1984. v. 68 (3). p. 219-222. Includes references. (NAL Call No.: 1.9 P69P).

0464

Effects of soil fumigants and aldicarb on corky ringspot disease and trichodorid nematodes in potato.

JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 665-671. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0465

Effects of soil fumigants and aldicarb on nematodes, tuber quality, and yield in potato.

JONEB. Weingartner, D.P. Shumaker, J.R. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology). Oct 1990. v. 22 (4S). p. 767-774. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0466

In-bed fumigation for control of rhizomania of sugar beet.

PLDIDE. Martin, F.N. Whitney, E.D. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1990. v. 74 (1). p. 31-35. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0467

Lethality of ozone for the biting gnat, Culicoides variipennis: fumigation of a biological safety cabinet for arbovirus research (Main vector of bluetongue virus, USA).

Akey, D.H. College Park, Md., Entomological Society of America. Journal of economic entomology. Apr 1982. v. 75 (2). p. 387-392. ill. 2 p. ref. (NAL Call No.: 421 J822).

PLANT DISEASES – PHYSIOLOGICAL

0468

Control of potassium deficiency syndrome in cotton by soil solarization.

CAGRA. Weir, W.L. Garber, R.H.; Stapleton, J.J.; Felix-Gastelum, R.; Wakeman, R.J.; DeVay, J.E. Oakland, Calif. : Division of Agriculture and Natural Resources, University of California. California agriculture. May/June 1989. v. 43 (3). p. 26-28. (NAL Call No.: DNAL 100 C12CAG).

0469

Effect of soil fumigation on the early growth and production of 'Delicious' apple trees (Specific apple replant disease).

Koch, B.L. Covey Jr., R.P.; Haglund, W. Alexandria, Va., The Society. Journal of the American Society for Horticultural Science. Nov 1980. v. 105 (6). p. 887-890. ill. 15 ref. (NAL Call No.: 81 S012).

MISCELLANEOUS PLANT DISORDERS

0470

Acute ozone stress on eastern cottonwood (*Populus deltoides* Bartr.) and the pest potential of the aphid, *Chaitophorus populicola* Thomas (Homoptera: Aphididae).

EVETEX. Coleman, J.S. Jones, C.G. College Park, Md. : Entomological Society of America. The effect of acute ozone exposure of eastern cottonwood (*Populus deltoides* Bartr.) on the survivorship, reproduction, and development of the aphid *Chaitophorus populicola* Thomas (Homoptera: Aphididae) was investigated. Cottonwoods were exposed to 397 microgram/m³ (0.20 ppm) ozone or charcoal-filtered air and infested with aphids on leaf plastochron index 5, 40 h after fumigation. Aphid performance was not significantly different on plants exposed to ozone compared with charcoal-filtered air-treated control plants. These data do not support the notion that aphid performance will directly increase on air pollution-stressed plants. We also examined settling and feeding preference of aphids for cottonwood leaves of different developmental ages. Aphids significantly preferred leaf plastochron index 5 to all other leaf ages. These data support hypotheses relating aphid leaf preference to stages of leaf development. Reproduction of the cottonwood leaf rust fungus (*Melampsora medusae* Thum.) and the imported willow leaf beetle (*Plagioderma versicolora* Laicharting) are reduced on ozone-fumigated plants (reported elsewhere). If aphid populations are affected by competition with these cottonwood pests for leaf resources, then aphid pest potential may actually increase in areas characterized by episodic ozone concentrations because of ozone-induced decreases in populations of *M. medusae* and *P. versicolora*. Environmental entomology. Apr 1988. v. 17 (2). p. 207-212. Includes references. (NAL Call No.: DNAL QL461.E532).

0471

Basamid and methyl bromide compounds as fumigants in carnation and chrysanthemum production in selected propagation media.

Semer, C.R. IV. S.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. Aug 1988. v. 100. p. 330-334. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0472

Design and performance of branch chambers suitable for long-term ozone fumigation of foliage in large trees.

JEVQAA. Teskey, R.O. Dougherty, P.M.; Wiselogle, A.E. Madison, Wis. : American Society of Agronomy. Fumigation chambers for exposing branches of mature trees to ozone (O₃) were developed and used in a 2-yr field study. The performance compared very favorably with that of open-top chambers. The branch chambers were cylindrical with dimensions of 1.5 by 0.5 m. To examine the effects that the chamber alone might have on branch or foliage

physiology and phenology, six chambers were placed on the branches of trees that had no additional treatments (i.e., no charcoal filtration or O₃ amendments). These chambers produced no significant effects on the growth of the branches or foliage within them, as compared with adjacent, nonchambered branches. Hourly net photosynthetic rates were also very similar. The air in the chambers was exchanged 10 times per minute, which resulted in nearly identical air temperatures, relative humidities, and CO₂ concentrations inside and outside the chambers. Only light levels were significantly lower within the chambers, which was due primarily to the light transmission properties of the PVC plastic covering the chambers. This approach allows long-term fumigations to be made on mature tissue of large trees, providing an alternative to the use of seedlings in studies of the effects O₃ or other gases on forest species. Journal of environmental quality. July/Sept 1991. v. 20 (3). p. 591-595. Includes references. (NAL Call No.: DNAL QH540.J6).

0473

Differential ozone susceptibility of Centennial Russett and White Rose potato as demonstrated by fumigation and antioxidant treatments (Cultivars, California).

Foster, K.W. APOJA. Guerard, J.P.; Oshima, R.J.; Bishop, J.C.; Timm, H. Orono : Potato Association of America. American potato journal. Feb 1983. v. 60 (2). p. 127-139. ill. 15 ref. (NAL Call No.: 75.8 P842).

0474

Effect of hydrogen fluoride fumigation in *Triticum aestivum*, *Brassica juncea* and *Phaseolus aureus* plants.

FLUOA. Sharma, H.C. Warren, Mich. : International Society for Fluoride Research. Fluoride. Jan 1985. v. 18 (1). p. 15-22. ill. Includes 17 references. (NAL Call No.: DNAL QP981.F55F55).

0475

Effects of fumigation with hydrogen fluoride on the loading of ¹⁴C sucrose into the phloem of soybean leaves.

ETOC DK. Madkour, S. Weinstein, L.H. Elmsford, N.Y. : Pergamon Press. Environmental toxicology and chemistry. 1988. v. 7 (4). p. 317-320. Includes references. (NAL Call No.: DNAL QH545.A1E58).

(MISCELLANEOUS PLANT DISORDERS)

0476

Effects of simulated ozone and sulfur dioxide fumigations on soybeans in open-top field chambers (Air pollution).

Pratt, G.C. Pittsburgh, Pa. : Air Pollution Control Association. Proceedings ... APCA annual meeting. 1983. v. 1 (76th). p. 83-2.1/1-83-2.1/21. ill. Includes references. (NAL Call No.: TD881.A56).

0477

Effects of sulfur dioxide fumigation in open-top field chambers on soil acidification and exchangeable aluminum (Tomato, *Lycopersicon esculentum*, acid rain, air pollution).

Lee, E.H. Heggstad, H.E.; Bennett, J.H. Madison, Wis., American Society of Agronomy. Journal of environmental quality. Jan/Mar 1982. v. 11 (1). p. 99-102. ill. 26 ref. (NAL Call No.: QH540.J6).

0478

Efficacy and phytotoxicity of methyl bromide as a fumigant for the Mexican fruit fly (Diptera: Tephritidae) in grapefruit.

JEENAI. Williamson, D.L. Summy, K.R.; Hart, W.G.; Sanchez-R, M.; Wolfenbarger, D.A.; Bruton, B.D. College Park, Md. : Entomological Society of America. Journal of economic entomology. Feb 1986. v. 79 (1). p. 172-175. Includes references. (NAL Call No.: DNAL 421 J822).

0479

Ethylene evolution and membrane permeability in red maple foliage fumigated with acute sulfur dioxide.

HJHSA. Roberts, B.R. Schnipke, V.M.; Barger, J.H. Alexandria, Va. : American Society for Horticultural Science. HortScience. May 1990. v. 25 (5). p. 560-561. Includes references. (NAL Call No.: DNAL SB1.H6).

0480

Field chambers for assessing crop loss from air pollutants.

JEVQAA. Musselman, R.C. McCool, P.M.; Oshima, R.J.; Teso, R.R. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Apr/June 1986. v. 15 (2). p. 152-157. ill. Includes references. (NAL Call No.: DNAL QH540.J6).

0481

Growth responses of woody species to long- and short-term fumigation with sulfur dioxide.

Jensen, K.F. FS-NE~FS-NE~FS-NC. Doehinger, L.S. Broomall, Pa., The Station. USDA Forest Service Research Paper NE - United States, Northeastern Forest Experiment Station. 1979. (442). 7 p. ill. 19 ref. (NAL Call No.: A99.9 F7622UN).

0482

Influence of sulfur dioxide fumigation on regrowth of American sycamore (*Platanus occidentalis*) seedlings treated with maleic hydrazide (Phytotoxicity).

Roberts, B.R. Domir, S.C. Alexandria, Va., American Society for Horticultural Science. HortScience. Feb 1981. v. 16 (1). p. 84-85. 13 ref. (NAL Call No.: SB1.H6).

0483

N-(2-(2-oxo-1-imidazolidinyl)ethyl)-N'-phenylurea as a protectant against ozone injury to laboratory fumigated pinto bean plants.

Weidensaul, T.C. St. Paul, Minn., American Phytopathological Society. Phytopathology. Jan 1980. v. 70 (1). p. 42-45. ill. 27 ref. (NAL Call No.: 464.8 P56).

0484

Open-air fumigation system for investigating sulfur dioxide effects on crops (Soybeans, air pollution effects).

Miller, J.E. Sprugel, D.G.; Muller, R.N.; Smith, H.J.; Xerikos, P.B. St. Paul, Minn., American Phytopathological Society. Phytopathology. Dec 1980. v. 70 (12). p. 1124-1128. ill. 14 ref. (NAL Call No.: 464.8 P56).

0485

Phytotoxic reaction of Hawaiian cut flowers and foliage to hydrogen cyanide fumigation.

HJHSA. Hansen, J.D. Chan, H.T. Jr.; Hara, A.H.; Tenbrink, V.L. Alexandria, Va. : American Society for Horticultural Science. HortScience. Jan 1991. v. 26 (1). p. 53-56. Includes references. (NAL Call No.: DNAL SB1.H6).

0486

Phytotoxic responses from citrus fruit to fumigation with ethylene dibromide.

PHYTAJ. Houck, L.G. Jenner, J.F.; Tebbets, S.; Hartsell, P.L. St. Paul, Minn. : American Phytopathological Society. Phytopathology. May 1985. v. 75 (5). p. 616-622. Includes 33 references. (NAL Call No.: DNAL 464.8 P56).

(MISCELLANEOUS PLANT DISORDERS)

0487

Phytotoxic responses of cherries, nectarines, peaches, pears, and plums fumigated with methyl bromide for control of Mediterranean fruit fly (*Ceratitis capitata*, quarantine).

Harvey, J.M. JOSH. Harris, C.M. Alexandria : The Society. Journal of the American Society for Horticultural Science. Nov 1982. v. 107 (6). p. 993-996. 5 ref. (NAL Call No.: 81 S012).

activity remained above that of the controls. The elevated antioxidant levels were maintained 21 hours after ozone exposure while photosynthetic rates recovered to about 75% of that of controls. Electron transport and NADPH levels remained unaffected by the treatment. Hence, elevated antioxidant metabolism may protect the photosynthetic apparatus during exposure to ozone. Plant physiology. June 1991. v. 96 (2). p. 650-655. Includes references. (NAL Call No.: DNAL 450 P692).

0488

Phytotoxicity of methyl bromide as a fumigant for Florida citrus fruit.

Hatton, T.T. AR-SO. Cubbedge, R.H. s.l., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. June 1, 1980. v. 92. p. 167-169. 7 ref. (NAL Call No.: 81 F66).

0491

Soil fumigation with dazomet and methyl bromide for control of corky root of iceberg lettuce. PLDIDE. O'Brien, R.D. Van Bruggen, A.H.C. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1990. v. 74 (12). p. 1022-1025. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0489

Preparation and use of mixed fumigant standards for multiresidue level determination by gas chromatography.

JAFCAU. Daft, J.L. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1985. v. 33 (4). p. 563-566. Includes references. (NAL Call No.: DNAL 381 J8223).

0490

Response of photosynthesis and cellular antioxidants to ozone in *Populus* leaves.

PLPHA. Gupta, A.S. Alscher, R.G.; McCune, D. Rockville, Md. : American Society of Plant Physiologists. Atmospheric ozone causes formation of various highly reactive intermediates (e.g. peroxy and superoxide radicals, H₂O₂ etc.) in plant tissues. A plant's productivity in environments with ozone may be related to its ability to scavenge the free radicals formed. The effects of ozone on photosynthesis and some free radical scavengers were measured in the fifth emergent leaf of poplars. Clonal poplars (*Populus deltoides* X *Populus* cv *caudina*) were fumigated with 180 parts per billion ozone for 3 hours. Photosynthesis was measured before, during, and after fumigation. During the first 90 minutes of ozone exposure, photosynthetic rates were unaffected but glutathione levels and superoxide dismutase activity increased. After 90 minutes of ozone exposure, photosynthetic rates began to decline while glutathione and superoxide dismutase continued to increase. Total glutathione (reduced plus oxidized) increased in fumigated leaves throughout the exposure period. The ratio of GSH/GSSG also decreased from 12.8 to 1.2 in ozone exposed trees. Superoxide dismutase levels increased twofold in fumigated plants. After 4 hours of ozone exposure, the photosynthetic rate was approximately half that of controls while glutathione levels and superoxide dismutase

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0492

Carbon dioxide as a control agent for the rusty grain beetle (Coleoptera: Cucujidae) in stored wheat.

JEENAI. White, N.D.G. Jayas, D.S.; Sinha, R.N. Lanham, Md. : Entomological Society of America. Rusty grain beetle, *Cryptolestes ferrugineus* (Stephens), populations in bins (58 cm diameter, 168 cm high) holding 322-kg bulks of wheat were controlled in 4-6 wk at 25 +/- 3 degrees C when carbon dioxide (CO2) levels were about 20% and oxygen (O2) levels were between 5 and 10%. At temperatures declining from 21 to 7 degrees C, 99.6% of *C. ferrugineus* populations were killed in 12 wk when carbon dioxide levels gradually fell from 20 to 9% and oxygen levels rose from 16 to 19.5%. Gas levels, temperature, grain moisture content, *C. ferrugineus* adult and larval numbers, seed germination, and seed infection by *Aspergillus glaucus* group and *Penicillium* spp. fungi were monitored for 12 wk in two experiments at either 25 degrees C or <21 degrees C. In the first experiment at 25 degrees C, unsealed control bins; sealed storage bins; and sealed treatment bins with 20, 30, and 45% CO2, respectively, were used. Temperature (higher at the top of the grain mass), carbon dioxide (lower at the top), oxygen, moisture (higher at the top), germination (lower at the top), and numbers of *C. ferrugineus* adults (lower at the top) and larvae (higher at the top, except at 30 and 45% CO2) were significantly different at different levels throughout the 163-cm columns of wheat. In the second experiment at 21 to 7 degrees C, carbon dioxide and oxygen levels were similar throughout the columns of grain in unsealed control and sealed bins. In 10 and 20% CO2 treatments, carbon dioxide levels were 2-3% higher in bottom than top samples. All variables except moisture were significantly different at different storage times in both experiments. All variables except *Penicillium* infection and moisture content in the warm grain or seed germination in the cool grain were different among treatments. *Journal of economic entomology*. Feb 1990. v. 83 (1). p. 277-288. Includes references. (NAL Call No.: DNAL 421 J822).

0493

Commodity treatments: responses of tomatoes and green bell peppers to fumigation with methyl bromide or ethylene dibromide (Chemical control of Mediterranean fruit fly, *Ceratitidis capitata*, storage decay).

Lipton, W.J. Tebbets, J.S.; Spitler, G.H.; Hartzell, P.L. Washington, D.C., The Department. Marketing research report - U.S. Department of Agriculture. June 1982. June 1982. (1125). 8 p. 17 ref. (NAL Call No.: 1 AG84MR).

0494

Control of *Botrytis cinerea* on grape berries during postharvest storage with reduced levels of sulfur dioxide.

PLDRA. Marois, J.J. Bledsoe, A.M.; Gubler, W.D.; Luvisi, D.A. St. Paul, Minn. : American Phytopathological Society. Plant disease. Nov 1986. v. 70 (11). p. 1050-1052. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0495

Development of alternative technologies for quarantine treatment of fruits and vegetables /prepared by the U.S. Department of Agriculture in response to House report 98-231 and House report 98-450. --.

Washington, D.C. : U.S. G.P.O., 1984. At head of title: 98th Congress, 2d session. Committee print. ~ "February 1984.". ix, 23 p. : ill. ; 24 cm. Bibliography: p. vii. (NAL Call No.: DNAL SB981.D4).

0496

Diffusion and sorption of the fumigant methylisothiocyanate in Douglas-fir wood.

WOODFAJ. Zahora, A.R. Morrell, J.J. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Jan 1989. v. 21 (1). p. 55-66. ill. Includes references. (NAL Call No.: DNAL TA419.W6).

0497

The effect of pH on decomposition of Mylone (dazomet) and tridipam to fungitoxic methylisothiocyanate in wood.

WOODFAJ. Morrell, J.J. Sexton, C.M.; Lebow, S. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Oct 1988. v. 20 (4). p. 422-430. Includes references. (NAL Call No.: DNAL TA419.W6).

0498

Effect of preparation (fumigation) and storage environment on lifespan of shelled peanut seed (Germination).

Norden, A.J. Madison, Wis., Crop Science Society of America. Crop science. Mar 1981. v. 21 (2). p. 263-266. 7 ref. (NAL Call No.: 64.8 C883).

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0499

Effectiveness of fumigants against marine wood-borers (Sodium N-methyl dithiocarbamate, methylisothiocyanate, trichloronitromethane, Limnoria tripunctata).
Heising, G.G. Graham, R.D.; Newbill, M.A. Madison, Wis. : Forest Products Research Society. Forest products journal. June 1984. v. 34 (6). p. 61-64. Includes references. (NAL Call No.: 99.9 F7662J).

0500

Evaluating potential decay control agents with a small block test.
WOOFAJ. Corden, M.E. Morrell, J.J. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Oct 1988. v. 20 (4). p. 477-486. Includes references. (NAL Call No.: DNAL TA419.W6).

0501

Evaluation of encapsulated and gelled chloropicrin formulations for use in wood poles.
WOOFAJ. Goodell, B.S. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Jan 1989. v. 21 (1). p. 37-44. ill. Includes references. (NAL Call No.: DNAL TA419.W6).

0502

Food processing pest management /edited by James Cink and Phillip Harein.
Cink, James.; Harein, Phillip. St. Paul, MN : Minnesota Extension Service, University of Minnesota, 1989. Abstract: This guide is for the non-commercial pesticide applicator who seeks Minnesota state certification in Food Processing Pest Control, In-plant application of "restricted-use" pesticides, including fumigants and In-plant application of fumigants only. The manual focuses on chemical and nonchemical prevention, control, removal and eradication of: insect; animal and bird; mold and fungus; bacterial; and weed pests. Formulations for insecticides, acaricides, herbicides, fungicides, bactericides, nematocides, rodenticides, avicides and fumigants are given. Safe use, pesticide label warnings and toxicity levels and dangers are stressed. Pesticide application and equipment are covered. Includes leaflets and pamphlets. 1 v. (various pagings) : ill. ; 28 cm. (NAL Call No.: DNAL SB937.F6).

0503

Fumigant control of marine borer attack in Douglas-fir piling.
FPJOA. Newbill, M.A. Morrell, J.J. Madison, Wis. : Forest Products Research Society. To assess the feasibility of using the fumigants chloropicrin, Vorlex, or methylisothiocyanate to enhance piling performance, experimental Douglas-fir pile sections were exposed for 3 years in marine waters at Newport, Oreg., or at Port Hueneme, Calif. Visual and chemical tests indicated that fumigant treatments did not provide long-term protection against marine borer attack when untreated wood was exposed during construction. Forest products journal. May 1991. v. 41 (5). p. 49-52. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0504

Fumigation of trailers, containers and railcars
National Pest Control Association. Dunn Loring, Va. : NPCA, c1987. The basics of forty foot trailer, specialized container, and railcar (boxcar and hopper car) fumigation are covered in this National Pest Control Association audio-visual training program for service technicians. The uses of sulfuryl fluoride, methyl bromide and phosphine, the three fumigants registered for fumigating commodities in these vessels, are described. The eight steps in the fumigation process are discussed in detail. This training package includes a video, practical training tips, program presentation recommendations, a pretest and a post test (with answers), a program script, and a supplemental information list. VHS. 1 videocassette (17 min.) : sd., col. ; 1/2 in. + 1 teaching guide/script (15 p.). (NAL Call No.: DNAL Videocassette no.1050).

0505

In-transit shipboard fumigation of grain: research to regulation.
CFWOD. Davis, R. Barrett, R.H. St. Paul, Minn. : American Association of Cereal Chemists. Abstract: The results of a cooperative research program involving USDA, national governments, and international agri-businesses for in-transit shipboard liquid fumigation of grain have been translated into regulations that ensure the safety and efficacy of the fumigation. The research program is described and fumigation implementation and emergency and aeration procedures are discussed. Research is continuing, to improve the current technology and to establish methodology to extend in-transit shipboard fumigation to other types of ships and commodities. Bioassay to assess the effectiveness of the fumigation also are discussed.(wz). Cereal foods world. Mar 1986. v. 31 (3). p. 227-229. ill. Includes 11 references. (NAL Call No.: DNAL 59.8 C333).

0506

Influence of sulfur dioxide fumigant dose on residues and control of postharvest decay of grapes.

PLDIDE. Smilanick, J.L. Harvey, J.M.; Hartsell, P.L.; Henson, D.J.; Harris, C.M.; Fouse, D.C.; Assemi, M. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1990. v. 74 (6). p. 418-421. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0507

Inhibitory activity of sulfur dioxide on the germination of spores of Botrytis cinerea.

PHYTA. Smilanick, J.L. Hartsell, P.I.; Henson, D.; Fouse, D.C.; Assemi, M.; Harris, C.M. St. Paul, Minn. : American Phytopathological Society. Spores of gray mold (*Botrytis cinerea*) were exposed to sulfur dioxide for 4 hr in dilute, buffered grape juice at pH 3.0, 3.5, and 4.0, acidities approximating those of mature table grapes. Concentrations of 2.8, 9.6, or 33.8 microgram/ml total SO₂, respectively, were required to kill 99% of the spores. The concentration of sulfur (IV) species (SO₂ and HS03-) at each acidity was calculated using the Henderson-Hasselbalch equation from the total sulfur dioxide concentration that killed 50% (LD50) of the spores. "Molecular" sulfur dioxide (SO₂) was present at 0.10-0.11 microgram/ml, whereas bisulfite (HS03-) ranged from 1.6 to 17.1 microgram/ml at LD50. This confirmed that the "molecular" form of SO₂ was the primary toxic species. Spores were exposed to SO₂ in dilute, buffered grape juice at pH 4 for 4 hr at 0, 10, 15, 20, 25, and 32 C. Concentrations of 886, 343, 300, 57.8, 49.3, and 25.8 microgram/ml total SO₂ were required, respectively, to kill 99% of the spores. The concentration and distribution of total SO₂ residues within fumigated grapes were determined by ion chromatography. After a 30-min fumigation with 5,000 or 10,000 ppm SO₂, the skin and pulp contained 7.6-16.5 and 0.7-0.9 microgram/g SO₂, respectively. Residues on or near the surface of fumigated grapes approached the toxic dosage above 20 C, whereas residues in the pulp were insufficient to kill the spores in dose-mortality tests. Phytopathology. Feb 1990. v. 80 (2). p. 217-220. Includes references. (NAL Call No.: DNAL 464.8 P56).

0508

Interactions between sodium N-methyldithiocarbamate and Douglas-fir heartwood.

WOOFJ. Miller, D.B. Morrell, J.J. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Apr 1990. v. 22 (2). p. 135-141. Includes references. (NAL Call No.: DNAL TA419.W6).

0509

Management of insects in farm-stored grains.

Matthew, David L. Edwards, Richard C. & Stored products insects. Document available from: Purdue University, Publication Mailing Room, 301 South Second Street, Lafayette, Indiana 47905 1980. Examines kinds of insects, source of infestation, surface treatment, fumigation and management of stored grain. 4 p. : ill. (NAL Call No.: Document available from source.). (NAL Call No.: E-66).

0510

Methyl bromide treatment of oak wilt infected logs: Laboratory and preliminary field fumigations (*Ceratocystis fagacearum*).

Schmidt, E.L. Ruetze, M.M.; French, D.W. Madison, Wis., Forest Products Research Society. Forest products journal. Mar 1982. v. 32 (3). p. 46-49. Includes 7 ref. (NAL Call No.: 99.9 F7662J).

0511

On-farm grain storage facilities and management practices in Kentucky.

Barney, R.J. Legg, D.E.; Sedlacek, J.D. Lanham, Md. : The Society. Bulletin of the Entomological Society of America. Winter 1989. v. 35 (4). p. 26-33. Includes references. (NAL Call No.: DNAL 423.9 EN8).

0512

Outgassing of ethylene dibromide from fumigated oranges (Worker exposure to pesticides).

Rappaport, S.M. Cameron, W.; McAllister, J. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1984. v. 32 (5). p. 1112-1116. ill. Includes 10 references. (NAL Call No.: 381 J8223).

0513

Permeability of polymer film wraps for citrus fruit fumigated with hydrogen cyanide to control California red scale.

JOSHB. Houck, L.G. Jenner, J.F.; Moreno, D.S.; Mackey, B.E. Alexandria, Va. : The Society. Permeability to the postharvest fumigant hydrogen cyanide (HCN) varied markedly among 13 plastic film-wrapping materials. Permeability was determined by comparing California red scale *Aonidiella aurantii* (Maskell) (CRS) surviving fumigation on film-wrapped and nonwrapped, insect-infested, fruit. HCN transmission rates for several films also were determined by a permeation cell technique. Some films partially restricted passage of the fumigant to the fruit and CRS survival was high, while permeability of other films differed little from unrestricted exposure on nonwrapped fruit and CRS survival was low. For

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films with low permeability to HCN, increasing the HCN concentration or length of fumigation time are possible methods of increasing the amount of HCN that penetrates to the fruit for control of quarantined insects. The permeability of film wrapping materials to fumigants should be a prime consideration when selecting films for wrapping citrus fruit in quarantine situations. Journal of the American Society for Horticultural Science. Mar 1989. v. 114 (2). p. 287-292. Includes references. (NAL Call No.: DNAL 81 S012).

0514

Phosphine residue and its desorption from cereals.

JAFCAU. Rangaswamy, J.R. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Nov/Dec 1985. v. 33 (6). p. 1102-1106. Includes references. (NAL Call No.: DNAL 381 J8223).

0515

Preconditioning grapefruit callus tissue reduces methyl bromide-induced K⁺ leakage.

HJHSA. Forney, C.F. Peterson, S.J.; Hartsell, P. Alexandria, Va. : American Society for Horticultural Science. HortScience. June 1990. v. 25 (6). p. 669-670. Includes references. (NAL Call No.: DNAL SB1.H6).

0516

Radiation for fumigation: the FDA introduces some interesting problems (Citrus).

Los Angeles, California Citrograph Publishing Co. Citrograph. July 1981. v. 66 (9). p. 216. (NAL Call No.: 80 C125).

0517

Recertification manual for private pesticide applicators : grain fumigation / by Michigan Department of Agriculture, Plant Industry Division. -.

(S.1.) The Dept. (1982?). Cover title ~Pesticide Applicator Training collection. 4 leaves ; 28 cm. (NAL Call No.: SB950.2.M5R433).

0518

Recirculation rate requirements for adequate distribution of carbon dioxide in grain bins.

TAAEA. Navarro, S. Jay, E.G.; Leesch, J.G. St. Joseph, Mich. : The Society. Transactions of the ASAE - American Society of Agricultural Engineers. Sept/Oct 1986. v. 29 (5). p. 1348-1354. 11l. Includes references. (NAL Call No.: DNAL 290.9 AM32T).

0519

Response of apple cultivars to fumigation with methyl bromide.

HJHSA. Meheriuk, M. Gaunce, A.P.; Dyck, V.A. Alexandria, Va. : American Society for Horticultural Science. HortScience. May 1990. v. 25 (5). p. 538-540. Includes references. (NAL Call No.: DNAL SB1.H6).

0520

A slide-hammer for pulling plugs in fumigated transmission poles.

Cantara, G.M. Graham, R.D. Madison, Wis. : Forest Products Research Society. Forest products journal. May 1983. v. 33 (5). p. 45. 11l. Includes references. (NAL Call No.: 99.9 F7662J).

0521

Stored products pest control category 7B / F. Robert Henderson ... et al. .

Henderson, F. Robert. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1986 . Abstract: Designed for commercial pesticide applicators, this manual provides information on the life cycles of stored product insects, the biology of vertebrate pests (rats, mice and birds) and their control. It explains how to properly and safely apply pesticides in food plants and fumigants. This study guide contains practice multiple choice questions. Cover title.~ At head of title: Commercial pesticide applicator certification and recertification study manual.~ "S-16, July 1986"--P. 4 of cover. 42 p. : 11l. ; 28 cm. (NAL Call No.: DNAL SB937.S7 1986).

0522

Using fumigants to control interior decay in waterfront timbers (Vapam, chloropicrin).

Highley, T.L. Eslyn, W.E. Madison, Wis., Forest Products Research Society. Forest products journal. Feb 1982. v. 32 (2). p. 32-34. 11l. Includes 9 ref. (NAL Call No.: 99.9 F7662J).

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0523

Agricultural commodity fumigation / prepared by Herbert Womack .

Womack, Herbert. Athens : Cooperative Extension Service, University of Georgia, College of Agriculture, 1989? . Abstract: Major topics covered in this manual include identification and life cycles of agricultural commodity insect pests; types of fumigants; factors affecting their effectiveness; safety; and proper application techniques. A pictorial key to beetles infesting stored foods and a formula chart for calculation volume are provided. Cover title.~ "Developed in cooperation with the Georgia Department of Agriculture.". 23 p. : ill. ; 28 cm. Includes bibliographical references. (NAL Call No.: DNAL SB950.A1S62 no.26).

0524

Anobiid beetles in structures.

WUExA. Suomi, D.A. Pullman, Wash. : The Service. Extension bulletin - Washington State University, Cooperative Extension Service. In subseries: Insect Answers. Jan 1991. (1577). 4 p. (NAL Call No.: DNAL 275.29 W27P).

0525

Assessing alternative methods of pest control in raisin storage (Methyl bromide, phosphine, low-oxygen atmospheres and nitrogen, includes energy requirements).

Gardner, P.D. Soderstrom, E.L.; Baritelle, J.L.; de Lozano, K.N. Berkeley : The Service. Bulletin - California University. Berkeley. Cooperative Extension Service. Nov 1982. Nov 1982. (1906). 19 p. ill. Includes references. (NAL Call No.: S39.A2C3).

0526

Bioassay of three isothiocyanates as fumigants against larvae of a Caribbean fruit fly (*Anastrepha suspensa*) and the apple maggot (*Rhagoletis pomonella*).

Carroll, J.F. AR-BARC. Morgan, N.O.; Weber, J.D. College Park, Md., Entomological Society of America. Journal of economic entomology. Apr 1980. v. 73 (2). p. 321-323. ill. 12 ref. (NAL Call No.: 421 J822).

0527

Carbon dioxide as a control agent for the rusty grain beetle (*Coleoptera: Cucujidae*) in stored wheat.

JEENAI. White, N.D.G. Jayas, D.S.; Sinha, R.N. Lanham, Md. : Entomological Society of America. Rusty grain beetle, *Cryptolestes ferrugineus* (Stephens), populations in bins (58 cm diameter, 168 cm high) holding 322-kg bulks of wheat were controlled in 4-6 wk at 25 +/- 3 degrees C when carbon dioxide (CO2) levels were

about 20% and oxygen (O2) levels were between 5 and 10%. At temperatures declining from 21 to 7 degrees C, 99.6% of *C. ferrugineus* populations were killed in 12 wk when carbon dioxide levels gradually fell from 20 to 9% and oxygen levels rose from 16 to 19.5%. Gas levels, temperature, grain moisture content, *C. ferrugineus* adult and larval numbers, seed germination, and seed infection by *Aspergillus glaucus* group and *Penicillium* spp. fungi were monitored for 12 wk in two experiments at either 25 degrees C or <21 degrees C. In the first experiment at 25 degrees C, unsealed control bins; sealed storage bins; and sealed treatment bins with 20, 30, and 45% CO2, respectively, were used. Temperature (higher at the top of the grain mass), carbon dioxide (lower at the top), oxygen, moisture (higher at the top), germination (lower at the top), and numbers of *C. ferrugineus* adults (lower at the top) and larvae (higher at the top, except at 30 and 45% CO2) were significantly different at different levels throughout the 163-cm columns of wheat. In the second experiment at 21 to 7 degrees C, carbon dioxide and oxygen levels were similar throughout the columns of grain in unsealed control and sealed bins. In 10 and 20% CO2 treatments, carbon dioxide levels were 2-3% higher in bottom than top samples. All variables except moisture were significantly different at different storage times in both experiments. All variables except *Penicillium* infection and moisture content in the warm grain or seed germination in the cool grain were different among treatments. Journal of economic entomology. Feb 1990. v. 83 (1). p. 277-288. Includes references. (NAL Call No.: DNAL 421 J822).

0528

Chemical controls /Bill F. Jones, Donald R. Johnson.

Jones, Bill F. Johnson, Donald R. Little Rock, Ark. : Cooperative Extension Service, University of Arkansas, 1984? . Abstract: This excerpted information about chemical treatment of on-farm stored grain is used in the Arkansas Pesticide Applicator Training Program. The use of rodenticides and insecticide and the equipment used for as well as the different methods of application are discussed and illustrated. Fumigation techniques are also described. Recommended dosage calibrations for all treatments are supplied. Life-threatening situations in grain storage bins are described and illustrated. Safety tips are emphasized. Reprinted from the University of Kentucky publication, "Management of on-farm stored grain", section 5. p. 59-92 : ill. ; 28 cm. (NAL Call No.: DNAL SB190.J62).

0529

Closed loop fumigation.

Noyes, R.T. Clary, B.L.; Stringer, M.E. Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989.

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(888). p. 106-117. (NAL Call No.: DNAL 275.29 OK41C).

0530

Commercial-scale vacuum fumigation with ethyl formate for postharvest control of the green peach aphid (Homoptera: Aphididae) on film-wrapped lettuce (*Myzus persicae*).
Stewart, J.K. Mon, T.R. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1984. v. 77 (3). p. 569-573. Includes references. (NAL Call No.: 421 J822).

0531

A comparison of ethylene dibromide levels in fumigated fruit fly infested grapefruit and insect mortality (Commodity treatment, fumigation, *Anastrepha suspensa*, residue).
Windeguth, D.L. vonPFSHA. King, J.R. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 219-221. Includes references. (NAL Call No.: 81 F66).

0532

Comparison of two dosages of hydrogen phosphide for in-transit fumigation of wheat on a bulk dry-cargo ship.
JEENAI. Redlinger, L.M. Davis, R.; Zettler, J.L.; Gillenwater, H.B.; Leesch, J.G.; Zehner, J.M.; McDonald, L.L. College Park, Md. : Entomological Society of America. Journal of economic entomology. Oct 1986. v. 79 (5). p. 1366-1371. ill. Includes references. (NAL Call No.: DNAL 421 J822).

0533

Control of the Caribbean fruit fly in Florida grapefruit by phosphine fumigation (*Anastrepha suspensa*, commodity treatment, quarantine, *Citrus paradisi*, quality).
Hatton, T.T.PFSHA. Cubbedge, R.H.; Windeguth, D.L. von; Spalding, D.H. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 221-224. Includes references. (NAL Call No.: 81 F66).

0534

Controlling insect pests in farm-stored grains.
Matthew, D.L. Jr. Edwards, C.R. Lafayette : The Service. Publication E - Purdue University, Cooperative Extension Service. Aug 1983. (66, rev.). 4 p. (NAL Call No.: DNAL SB844.I6P8).

0535

Controlling wood deterioration with fumigants: a review.
FPJDA. Morrell, J.J. Corden, M.E. Madison, Wis. : Forest Products Research Society. Forest products journal. Literature review. Oct 1986. v. 36 (10). p. 27-34. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0536

Cost and effectiveness of chemical insect control measures in farm-stored Kansas wheat.
JKESA. Reed, C. Anderson, K.; Brockschmidt, J.; Wright, V.; Pedersen, J. Lawrence, Kan. : The Society. Journal of the Kansas Entomological Society. July 1990. v. 63 (3). p. 351-360. Includes references. (NAL Call No.: DNAL 420 K13).

0537

Disinfection of papaya by microwave radiation (Alternative to fumigation for the control of fruit flies, *Dacus dorsalis*).
Hayes, C.F. Honolulu : The Institute. Research extension series - Hawaii Institute of Tropical Agriculture and Human Resources. July 1983. Presented at the 18th annual Hawaii Papaya Industry Association Conference, Honolulu, October, 1982. July 1983. (033). p. 79-80. ill. (NAL Call No.: S481.R4).

0538

Distribution of ethylene dibromide within a fumigation chamber during fumigation of citrus fruit.
JAFCAU. Morris, S.C. Rippon, L.E. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1985. v. 33 (5). p. 801-803. Includes references. (NAL Call No.: DNAL 381 J8223).

0539

Doane Stewart of Vikane gas (drywood termite) fumigant.
Wurm, R. Midland, Mich., Dow Chemical. Industrial vegetation turf and pest management. 1980. v. 12 (1). p. 22-23. (NAL Call No.: S571.A1I5).

0540

Dose/response of codling moth (*Lepidoptera: Tortricidae*) eggs and nondiapausing and diapausing larvae to fumigation with methyl bromide.
JEENAI. Tebbets, J.S. Vail, P.V.; Hartsell, P.L.; Nelson, H.D. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1986. v. 79 (4). p.

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1039-1043. Includes references. (NAL Call No.: DNAL 421 J822).

0541

An economic analysis of producers' decisions regarding insect control in stored grain.

Anderson, K. Schurle, B.; Reed, C.; Pedersen, J. Columbus, Ohio : Ohio State University. The quantity of grain in storage has been exceptionally high through much of the early 1980s. As a result, the effect of insect activity on quality of grain that is stored for long periods of time has become a major concern. The purpose of this study was to analyze producer choices regarding treatments for control of insects in stored grain. A second degree stochastic dominance criterion was used to compare three treatments. In more than 80% of the comparisons, a protectant (malathion) was in the efficient set, which means that it could be selected by a risk-averse individual. In over 65% of the comparisons, a minimum treatment was in the efficient set. Treatment by fumigating was selected to remain in the efficient set in only 34% of the comparisons. Data from this study (before the implementation of the May 1988 regulations of the Federal Grain Inspection Service regarding insect infestation and insect-damaged kernels) suggest that elevator discounts were not consistent nor large enough to encourage farmers to incur large costs for controlling insects. North Central journal of agricultural economics. Jan 1990. v. 12 (1). p. 23-29. Includes references. (NAL Call No.: DNAL HD1773.A3N6).

0542

Economic cost evaluation of a generated low-oxygen atmosphere as an alternative fumigant in the bulk storage of raisins (*Oryzaephilus surinamensis*, *Plodia interpunctella*, *Carpophilus hemipterus*, *Cadra figulilella*).

Soderstrom, E.L. Gardner, P.D.; Baritelle, J.L.; De Lozano, K.N.; Brandl, D.G. College Park, Md. : Entomological Society of America. Journal of economic entomology. Apr 1984. v. 77 (2). p. 457-461. Includes references. (NAL Call No.: 421 J822).

0543

EDB (ethylene dibromide) update (Use for post-harvest fumigation of papayas, Rebuttable Presumption Against Registration, Hawaii).

Fujiyama, S. Honolulu : The Institute. Research extension series - Hawaii Institute of Tropical Agriculture and Human Resources. Oct 1982. Presented at the 17th Annual Hawaii Papaya Industry Association Conference, September, 1981. Oct 1982. (020). p. 47-50. (NAL Call No.: S481.R4).

0544

The effect of phosphine treatment on superoxide dismutase, catalase, and peroxidase in the Granary weevil, *Sitophilus granarius*.

PCBPB. Bolter, C.J. Chefurka, W. Duluth, Minn. : Academic Press. Pesticide biochemistry and physiology. Jan 1990. v. 36 (1). p. 52-60. Includes references. (NAL Call No.: DNAL SB951.P49).

0545

Effect of reduced pressure and CO2 (carbon dioxide) on the toxicity of methyl bromide to two species of stored-product insects (*Tribolium castaneum*, *Sitophilus oryzae*).

Calderon, M. JEENA. Leesch, J.G. College Park : Entomological Society of America. Journal of economic entomology. Oct 1983. v. 76 (5). p. 1125-1128. Includes references. (NAL Call No.: 421 J822).

0546

Effect of temperature on the Efficacy of methyl bromide against adults of *Sitophilus granarius* (L.) (Coleoptera: Curculionidae) on soft and hard wheats.

JEENAI. Cherif, R. Leesch, J.; Davis, R. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1985. v. 78 (3). p. 660-665. ill. Includes references. (NAL Call No.: DNAL 421 J822).

0547

Efficacy and phytotoxicity of methyl bromide as a fumigant for the Mexican fruit fly (Diptera: Tephritidae) in grapefruit.

JEENAI. Williamson, D.L. Summy, K.R.; Hart, W.G.; Sanchez-R, M.; Wolfenbarger, D.A.; Bruton, B.D. College Park, Md. : Entomological Society of America. Journal of economic entomology. Feb 1986. v. 79 (1). p. 172-175. Includes references. (NAL Call No.: DNAL 421 J822).

0548

Efficacy of hydrogen cyanide fumigation as a treatment for pests of Hawaiian cut flowers and foliage after harvest.

JEENAI. Hansen, J.D. Hara, A.H.; Chan, H.T. Jr.; Tenbrink, V.L. Lanham, Md. : Entomological Society of America. Efficacy of 30 min fumigations at 2,500, 3,700, and 4,600 ppm of hydrogen cyanide (HCN) was tested in the laboratory as a treatment against representative Hawaiian quarantine pests. Effective results were obtained for nymphs and adults of the banana aphid, *Pentalonia nigronervosa* Coquerel, in red ginger flowers; an armored scale, *Pseudaulacaspis cockerelli* (Cooley), on oleander leaves; the green scale, *Coccus viridis* (Green), on ixora leaves; and

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nymphs of the coconut mealybug, *Nipaecoccus nipae* (Maskell), on palm. Other species of mealybugs and ants also were susceptible to the treatment, particularly at the highest concentration. Most nymphs and adults of a thrips, *Sciothrips cardamomi* (Ramakrishna), in red ginger flowers survived all concentrations of fumigation. All adults of an orchid weevil, *Orchidophilus aterrimus* (Waterhouse), survived the treatment. The suitability of HCN fumigation is discussed. *Journal of economic entomology*. Apr 1991. v. 84 (2). p. 532-536. Includes references. (NAL Call No.: DNAL 421 J822).

0549

Efficacy of perforated tubing in assisting phosphine distribution for in-transit fumigation of export corn (Control method for stored-product insects, *Sitophilus zeamais*, *Rhyzopertha dominica*, *Tribolium confusum*). Zettler, J.L. Gillenwater, H.B.; Redlinger, I.M.; Leesch, J.G.; Davis, R.; McDonald, L.L.; Zehner, J.M. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. June 1984. v. 77 (3). p. 675-679. ill. Includes references. (NAL Call No.: 421 J822).

0550

Efficacy of sulfuryl fluoride against four beetle pests of museums (Coleoptera: Dermestidae, Anobiidae). JEENAI. Su, N.Y. Scheffrahn, R.H. Lanham, Md. : Entomological Society of America. The efficacy of sulfuryl fluoride against adults, larvae, and eggs of four coleopterans--furniture carpet beetle, *Anthrenus flavipes* Leconte; black carpet beetle, *Attagenus megatoma* (F.); cigarette beetle, *Lasioderma serricornis* (F.); and hide beetle, *Dermestes maculatus* (De Geer)--was determined. Adults were generally more susceptible to sulfuryl fluoride than larvae. Eggs were the most tolerant stage; T-30 times more fumigant was required compared with rates required to kill adults and larvae. Our results indicated that the cumulative dose required to kill 99% of *A. flavipes* larvae was 156 mg.h/liter. This rate exceeds the current recommended rate (approximately 72 mg.h/liter) of sulfuryl fluoride for control of carpet beetles. Eggs of cigarette beetles exposed to higher concentrations of sulfuryl fluoride developed at a slower rate. For multiple fumigation intended to control adults and larvae rather than eggs, the delayed embryonic development of eggs exposed to the sublethal dose of sulfuryl fluoride should be considered in determining the timing between fumigations. *Journal of economic entomology*. June 1990. v. 83 (3). p. 879-882. Includes references. (NAL Call No.: DNAL 421 J822).

0551

EPA regulation for grain fumigation. Criswell, J.T. Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 31-52. ill. (NAL Call No.: DNAL 275.29 OK41C).

0552

Ethylene dibromide fumigation of California-grown citrus: effect of dosage, temperature, and load factor on gas concentration, sorption, and residues. JEENAI. Tebbets, J.S. Hartzell, P.L.; Houck, L.G.; Tebbets, J.C. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. Aug 1986. v. 79 (4). p. 1044-1049. Includes references. (NAL Call No.: DNAL 421 J822).

0553

Ethylene dibromide fumigation of citrus in reefer compartments on a refrigerated ship (*Ceratitis capitata*). Leesch, J.G. Davis, R.; Eons, J.G.; Reeves, R.; Houck, L.G.; Zehner, J.M. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. June 1984. v. 77 (3). p. 773-783. ill. Includes references. (NAL Call No.: 421 J822).

0554

Feasibility of fumigating unmodified river barges with phosphine while in transit. JEENAI. Zettler, J.L. Leesch, J.G.; Gillenwater, H.B.; Redlinger, L.M.; Davis, R.; Zehner, J.M. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. Oct 1986. v. 79 (5). p. 1315-1318. Includes references. (NAL Call No.: DNAL 421 J822).

0555

Field comparison of sulfuryl fluoride susceptibility among three termite species (Isoptera: Kalotermitidae, Rhinotermitidae) during structural fumigation. JEENAI. Su, N.Y. Scheffrahn, R.H. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. Aug 1986. v. 79 (4). p. 903-908. ill. Includes references. (NAL Call No.: DNAL 421 J822).

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Field tests of phosphine gas for fumigation or rice.

Tilton, E.W. Cogburn, R.R. College Station, Tex. : The Texas Agricultural Experiment Station, The Texas A&M University System. Proceedings - Rice Technical Working Group. Includes abstract. Mar 1963. p. 29. ill. Includes references. (NAL Call No.: DNAL SB191.R5R52).

0557

Fighting bugs without fumigants.

Banker, E. Washington, D.C. : The Service. Farmlife - United States Dept. of Agriculture, Economic Research Service. May 1985. v. 6 (5). p. 4-6. ill. (NAL Call No.: DNAL aHD1401.A2U52).

0558

Food processing pest management /edited by James Cink and Phillip Harein.

Cink, James.; Harein, Phillip. St. Paul, MN : Minnesota Extension Service, University of Minnesota, 1989. Abstract: This guide is for the non-commercial pesticide applicator who seeks Minnesota state certification in Food Processing Pest Control, In-plant application of "restricted-use" pesticides, including fumigants and In-plant application of fumigants only. The manual focuses on chemical and nonchemical prevention, control, removal and eradication of: insect; animal and bird; mold and fungus; bacterial; and weed pests. Formulations for insecticides, acaricides, herbicides, fungicides, bactericides, nematocides, rodenticides, avicides and fumigants are given. Safe use, pesticide label warnings and toxicity levels and dangers are stressed. Pesticide application and equipment are covered. Includes leaflets and pamphlets. 1 v. (various pagings) : ill. ; 28 cm. (NAL Call No.: DNAL SB937.F6).

0559

Fumigant piping system for hydrogen phosphide in (agricultural) commodities (Pest control).

Cleveland, Harvest Publishing Co. Pest control. Feb 1980. v. 48 (2). p. 54. ill. (NAL Call No.: 449.8 EX8).

0560

Fumigation : category 7C / (prepared by Harold J. Stockdale and Linda A. Buntin). -.

Stockdale, Harold J. Buntin, Linda A. & Iowa commercial pesticide applicator manual. Ames, Iowa Cooperative Extension Service, Iowa State University 1980. Pesticide Applicator Training Collection ~Cover title ~At head of title: Iowa commercial pesticide applicator manual ~"September 1980. ~CS-27. 35, (1) p., (1) p. of

plates : ill., map, form ; 28 cm. (NAL Call No.: SB955.S72 1980).

0561

Fumigation of baled cotton with hydrocyanic acid for the pink bollworm by A.C. Johnson, George G. Becker, and Lon A. Hawkins. -.

Johnson, A. C. Washington, D.C. U.S. Dept. of Agriculture 1938. 46 p. : ill. --. Includes bibliographical references. (NAL Call No.: Fiche S-69 no.623).

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Fumigation of dates with phosphine (for control of *Ephestia cautella*).

Leesch, J.G. Redlinger, L.M.; Gillenwater, H.B.; Zehner, J.M. College Park, Entomological Society of America. Journal of economic entomology. Aug 1982. v. 75 (4). p. 685-687. 8 ref. (NAL Call No.: 421 J822).

0563

Fumigation of empty grain drying bins with chloropicrin, phosphine, and liquid fumigant mixtures (*Tribolium castaneum*, *Sitophilus oryzae*).

Quinlan, J.K. McGaughey, W.H. College Park, Md. : Entomological Society of America. Journal of economic entomology. Feb 1983. v. 76 (1). p. 184-187. Includes references. (NAL Call No.: 421 J822).

0564

Fumigation of farm-stored grain (Insect control, Idaho).

Sandvol, L.E. Homan, H.W.; Halderson, J.L. Moscow : The Service. Current information series - Cooperative Extension Service, University of Idaho. Feb 1982. Feb 1982. (644). 2 p. (NAL Call No.: 275.29 ID13IDC).

0565

Fumigation of food shipments in-transit.

Liscombe, E.A.R. St. Paul, Minn. : American Association of Cereal Chemists, c1984. Insect management for food storage and processing / edited by Fred J. Baur. p. 181-192. Includes references. (NAL Call No.: DNAL SB937.I49).

0566

Fumigation of imported shelled peanuts with methyl bromide (against khapra beetles, *Trogoderma granarium*, residues).

Leesch, J.G. PNTSB. Redlinger, L.M.; Young, C.T.; Sukkestad, D.R. Raleigh : American Peanut Research and Education Society. Peanut science.

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Jan/June 1983. v. 10 (1). p. 33-36. ill.
Includes references. (NAL Call No.:
SB351.P3P39).

0567

Fumigation of raw and processed commodities.
Bond, E.J. St. Paul, Minn. : American
Association of Cereal Chemists, c1984. Insect
management for food storage and processing /
edited by Fred J. Baur. p. 145-160. ill.
Includes references. (NAL Call No.: DNAL
SB937.I49).

0568

Fumigation of structures.
Davis, R. Harein, P.K. St. Paul, Minn. :
American Association of Cereal Chemists, c1984.
Insect management for food storage and
processing / edited by Fred J. Baur. p.
162-170. Includes references. (NAL Call No.:
DNAL SB937.I49).

0569

Fumigation pest control. -.
(Madison) University of Wisconsin-Extension
(1982?). Integrated Pest Management/Pesticide
Applicator Training Collection ~Cover title ~At
head of title: Pest management principles for
the commercial applicator. 1 v. (various
pagings) : ill. (some col.) ; 30 cm. Includes
bibliographical references. (NAL Call No.:
SB955.F82).

0570

**Fumigation pest control training for
certification / Jim Hamer ... et al.**
Hamer, Jim L. Mississippi State? :
Cooperative Extension Service, Mississippi
State University, 1985? . Abstract: This is a
self-study manual designed for commercial
pesticide applicator certification in
fumigation pest control. It discusses the
nature and effect of fumigants, precautions,
protective equipment, and detection, symptoms
and emergency treatment for acute poisoning by
fumigants. The identification, biology and
behavior of Stored Grain Insect Pests is also
covered. vii, 51, 7 p. : ill. ; 28 cm.
Includes bibliographical references. (NAL Call
No.: DNAL SB955.F84).

0571

Fumigation pesticide applicator manual.
Stillwater? : Cooperative Extension Service,
Division of Agriculture, Oklahoma State
University, 1987? . Abstract: This training
packet includes publications and other
materials on topics such as safety, equipment,
specific products, and pest identifications. 0.

Norman Nesheim, Extension Pesticide
Coordinator.~ Includes contents sheet and
various materials. 1 portfolio : ill. ; 32 cm.
(NAL Call No.: DNAL SB955.F83).

0572

**Grain fumigation & seed treatment training
manual.**
Helena, Mont. : Montana Dept. of Agriculture,
1987 . Abstract: This manual, designed as a
study guide for commercial applicators involved
in seed treatment and fumigation of stored
grain, can be used to prepare for the seed
treatment test. It presents information on the
identification, management and chemical control
of stored grain pests, recognition of important
seed pathogens, seed treatments, application
equipment, and safety concerns. Cover title.~
"January 1987.". ii, 41 p. : ill. ; 28 cm. (NAL
Call No.: DNAL SB950.2.M9G72).

0573

Grain fumigation and fumigants.
MacLean, J.T. Beltsville, Md. : The Library.
Quick bibliography series - National
Agricultural Library. May 1982. Bibliography.
May 1982. (82-12). 18 p. (NAL Call No.:
aZ5071.N3).

0574

**Grain fumigation and seed treatment training
manual. -.**
Helena Montana Dept. of Agriculture 1981. Cover
title ~Pesticide Applicator Training
collection. i, 35, (1) p. : ill. ; 28 cm. (NAL
Call No.: SB950.2.M9G7).

0575

**Handbook of pest control the behavior, life
history, and control of household pests /by
Arnold Mallis editorial director, Keith Story
production editor, Dan Morelandart director,
Charlotte Goerss.**
Mallis, Arnold. Cleveland, Ohio : Franzak &
Foster Co., c1990 . Abstract: Written for
practicing urban pest management professionals
particularly pest control operators, this
comprehensive reference handbook covers the
behavior, biology and control of household
pests including vertebrate pests and occasional
invaders. Integrated pest management (IPM)
methods are emphasized and additional
information on nonchemical approaches is
provided in the seventh edition. New sections
on chemophobia, liability and litigation,
pesticide safety and IPM in sensitive
environments are included. Chemicals used in
structural pest management, fumigation and
equipment are discussed. Contains a glossary,
index of pesticide common names and examples of
registered trade names and numerous
illustrations and pictorial keys to aid in

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identification. 1152 p., 34 p. of plates :
ill. (some col.), maps ; 24 cm. Includes
bibliographies and indexes. (NAL Call No.: DNAL
TX325.M3 1990).

0576

**In-transit fumigation of truck-ship containers
with hydrogen phosphide--a feasibility study
(Insect control, stored product pests,
cereals).**

Jay, E. Davis, R.; Zehner, J.M. New Orleans :
The Region. Advances in agricultural
technology. AAT-S - United States, Dept. of
Agriculture, Agricultural Research Service,
Southern Region. Apr 1983. Apr 1983. (28). 13
p. Includes references. (NAL Call No.:
aS21.A75U7).

0577

**In-transit shipboard fumigation of corn on
tanker vessel.**

Zettler, J.L.JEENA. Gillenwater, H.B.;
Redlinger, L.M.; Leesch, J.G.; Davis, R.
College Park : Entomological Society of
America. Journal of economic entomology. Oct
1982. v. 75 (5). p. 804-808. ill. Includes
references. (NAL Call No.: 421 J822).

0578

**In-transit shipboard fumigation of wheat on a
tanker (Insect pest control, USA).**

Redlinger, L.M.JEENA. Leesch, J.G.; Davis, R.;
Zettler, J.L.; Gillenwater, H.B.; Zehner, J.M.
College Park : Entomological Society of
America. Journal of economic entomology. Dec
1982. v. 75 (6). p. 1147-1152. ill. 6 ref. (NAL
Call No.: 421 J822).

0579

**Increased aeration of citrus fumigated with
ethylene dibromide (Caribbean fruit fly,
Anastrepha suspensa, air pollution).**

Miller, W.M.PFSHA. Ismail, M.A.; Craig, J.O.
Lake Alfred : The Society. Proceedings of the
... annual meeting - Florida State
Horticultural Society. 1982. v. 95. p. 216-218.
Includes references. (NAL Call No.: 81 F66).

0580

**Induction of glutathione S-transferase by
fumigants in larvae of the Khapra beetle,
Trogoderma granarium (E.).**

PCBPB. Shivanandappa, T. Rajendran, S. Duluth,
Minn. : Academic Press. Pesticide biochemistry
and physiology. May 1987. v. 28 (1). p.
121-126. Includes references. (NAL Call No.:
DNAL SB951.P49).

0581

**Industry's use of ethylene dibromide for
fumigation (Citrus, fruit flies).**

Lins, D.M.PFSHA. Lake Alfred : The Society.
Proceedings of the ... annual meeting - Florida
State Horticultural Society. 1982. v. 95. p.
252-254. (NAL Call No.: 81 F66).

0582

**Inhalation exposure of grain samplers and grain
inspectors to carbon tetrachloride.**

ACSMC. Deer, H.M. McJilton, C.E.; Karein, P.K.;
Sumner, W. Washington, D.C. : The Society. ACS
Symposium series - American Chemical Society.
1985. (273). p. 221-241. Includes 57
references. (NAL Call No.: DNAL QD1.A45).

0583

**Insect control in farm stored grain (by
fumigation, fumigants, application).**

Brookings, S.D., The Service. EC. 1980. 1980.
(738). 6 p. ill. (NAL Call No.: 275.29 S085).

0584

Magnesium phosphide.

Wilbur, D.A. Jr. Manhattan : Kansas State
University, 1984. Proceedings of the Third
International Working Conference on
Stored-Product Entomology : Oct 23-28, 1983,
Kansas State Univ., Manhattan, Kansas / spon.
Dept. of Entomology and Dept. of Grain Science
a. p. 341-345. (NAL Call No.: DNAL SB937.I5
1983).

0585

**Magnesium phosphide as a fumigant for control
of the cigarette beetle, Lasioderma serricorne
(F.) at low temperature.**

Faustini, D.L. Manhattan : Kansas State
University, 1984. Proceedings of the Third
International Working Conference on
Stored-Product Entomology : Oct 23-28, 1983,
Kansas State Univ., Manhattan, Kansas / spon.
Dept. of Entomology and Dept. of Grain Science
a. p. 308-328. ill. Includes references. (NAL
Call No.: DNAL SB937.I5 1983).

0586

Managing insects in farm-stored grain.

Foster, Dave. Stockdale, Harold. Document
available from: Iowa State University,
Publications Distribution, Printing &
Publications Bldg., Ames, Iowa 50011 1983.
Provides a simple program of sanitation,
protectants, and monitoring to follow to keep
grain that is sufficiently dry and cool, free
of insect damage. 4 p. : ill. (NAL Call No.:
Document available from source.).(NAL Call No.:

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Pm-205).

0587

Metabolism of methyl bromide by susceptible and resistant strains of the granary weevil, *Sitophilus granarius* (L.) (Pesticide detoxification, wheat).

Starratt, A.N. Bond, E.J. New York, Academic Press. Pesticide biochemistry and physiology. June 1981. v. 15 (3). p. 275-281. 20 ref. (NAL Call No.: SB951.P49).

0588

Methyl bromide and other grain fumigants.

Sargent, J.E. Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 25-30. (NAL Call No.: DNAL 275.29 OK41C).

0589

Methyl bromide fumigation and cold storage as treatments for California stone fruits and pears infested with the Caribbean fruit fly (Diptera: Tephritidae).

JEENAI. Benschoter, C.A. Lanham, Md. : Entomological Society of America. Journal of economic entomology. Dec 1988. v. 81 (6). p. 1665-1667. Includes references. (NAL Call No.: DNAL 421 J822).

0590

Methyl bromide fumigation followed by cold storage as treatment for *Anastrepha suspensa* (Diptera: Tephritidae) in grapefruit.

Benschoter, C.A. JEENAI. College Park : Entomological Society of America. Journal of economic entomology. Oct 1982. v. 75 (5). p. 860-862. Includes references. (NAL Call No.: 421 J822).

0591

Methyl bromide fumigation for control of oriental fruit fly (Diptera: Tephritidae) in California stone fruits.

JEENAI. Armstrong, J.W. Harvey, J.M.; Garcia, D.L.; Menezes, T.D.; Brown, S.A. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1988. v. 81 (4). p. 1120-1123. Includes references. (NAL Call No.: DNAL 421 J822).

0592

Methyl bromide fumigation for quarantine control of codling moth (Lepidoptera: Tortricidae) on nectarines.

JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1987. v. 80 (4). p. 840-842. Includes references. (NAL Call No.: DNAL 421 J822).

0593

Methyl bromide fumigation treatments at 30 degrees Celsius for California stonefruits infested with the Mediterranean fruit fly (Diptera: Tephritidae) (*Ceratitis capitata*, apricots, nectarines, peaches, and plums).

Armstrong, J.W. Couey, H.M. College Park, Md. : Entomological Society of America. Journal of economic entomology. Oct 1984. v. 77 (5). p. 1229-1232. Includes 10 references. (NAL Call No.: 421 J822).

0594

Methyl bromide fumigation treatments for pistachio nuts to decrease residues and control navel orangeworm, *Amyelois transitella* (Lepidoptera: Pyralidae).

JEENAI. Hartsell, P.L. Nelson, H.D.; Tebbets, J.C.; Vail, P.V. College Park, Md. : Entomological Society of America. Journal of economic entomology. Oct 1986. v. 79 (5). p. 1299-1302. Includes references. (NAL Call No.: DNAL 421 J822).

0595

Methyl bromide quarantine fumigation for strawberries infested with Mediterranean fruit fly (Diptera: Tephritidae) (*Ceratitis capitata*).

Armstrong, J.W. Schneider, E.L.; Garcia, D.L.; Couey, H.M. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1984. v. 77 (3). p. 680-682. Includes references. (NAL Call No.: 421 J822).

0596

A methyl bromide quarantine treatment to control codling moth (Lepidoptera: Tortricidae) on nectarines packed in shipping containers for export to Japan and effect on fruit attributes.

JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. Lanham, Md. : Entomological Society of America. Codling moth, *Cydia pomonella* (L.), eggs (n = 25,594) on 'Royal Giant' nectarines, *Prunus* sp., packed in styrene cup trays in Bliss-style, single wall, corrugated fiberboard shipping containers (one cup tray per container) did not survive a fumigation quarantine treatment (48 g/m³ methyl bromide, 2 h at greater than or equal to 21 degrees C, 50% load) currently used to treat nectarines in field bins for export to Japan. Fumigation of

nectarines in shipping containers did not affect fruit weight loss, soluble solids or titratable acidity after 5 wk in storage (0-1 degrees C). Total carotenoid content was significantly lower in fumigated fruit than unfumigated control fruit after 1, 2, 3, and 5 wk of storage. Preconditioning (17 h at 21 degrees C) cooled fruit (approximately 2 degrees C) before fumigation and storage (1 wk at 0-1 degrees C) resulted in a significantly lower carotenoid content than untreated fruit, which may be related to delayed ripening that would extend shelf life. We propose that fumigation of nectarines in shipping containers is a practical and efficacious method to disinfest nectarines of potential codling moth infestations for export to Japan. Journal of economic entomology. Dec 1990. v. 83 (6). p. 2335-2339. ill. Includes references. (NAL Call No.: DNAL 421 J822).

0597

Methyl bromide toxicity at various low temperatures and exposure periods to Angoumois grain moth (*Sitotroga cerealella*) and Indian meal moth (*Plodia interpunctella*) in popcorn. Vincent, L.E. Rust, M.K.; Lindgren, D.L. College Park, Md., Entomological Society of America. Journal of economic entomology. Apr 1980. v. 73 (2). p. 313-317. ill. 7 ref. (NAL Call No.: 421 J822).

0598

Modified atmospheres for postharvest insect control in tree nuts and dried fruits. Soderstrom, E.L. Brandl, D.G. Manhattan : Kansas State University, 1984. Proceedings of the Third International Working Conference on Stored-Product Entomology : Oct 23-28, 1983, Kansas State Univ., Manhattan, Kansas / spon. Dept. of Entomology and Dept. of Grain Science a. p. 487-497. Includes references. (NAL Call No.: DNAL SB937.I5 1983).

0599

Moth control in stored grain and the role of *Bacillus thuringiensis*: an overview. RREVA. Subramanyam, B. Cutkomp, L.K. New York, N.Y. : Springer. Residue reviews. Literature review. 1985. v. 94. p. 1-47. ill. Includes references. (NAL Call No.: DNAL 389.9 R314).

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On-farm grain storage facilities and management practices in Kentucky. Barney, R.J. Legg, D.E.; Sedlacek, J.D. Lanham, Md. : The Society. Bulletin of the Entomological Society of America. Winter 1989. v. 35 (4). p. 26-33. Includes references. (NAL Call No.: DNAL 423.9 EN8).

0601

Organic and inorganic bromide residues in spices fumigated with methyl bromide. JAFCAU. Reeves, R.G. McDaniel, C.A.; Ford, J.H. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1985. v. 33 (5). p. 780-783. Includes 5 references. (NAL Call No.: DNAL 381 J8223).

0602

OSHA requirements in commercial grain storage fumigation. Noyes, R.T. Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 60-75. (NAL Call No.: DNAL 275.29 OK41C).

0603

Ovicidal activity of sulfuryl fluoride to anobiid and lyctid beetle eggs of various ages. JESCEP. Williams, L.H. Sprenkel, R.J. Tifton, Ga. : Georgia Entomological Society. Journal of entomological science. July 1990. v. 25 (3). p. 366-375. ill. Includes references. (NAL Call No.: DNAL QL461.G4).

0604

Pest management principles for the commercial applicator fumigation pest control /John Wedberg ... et al. . Wedberg, J. L. Madison, WI : University of Wisconsin-Extension, 1988 . Abstract: Training manual for commercial pesticide applicators in the fumigation pest-control category. Major topics: fumigants; methods of fumigation; principles of insect control; calibration; stored grain fumigation; toxicity of pesticides; protecting human health and the environment; disposal; and label information. Includes study guide of multiple choice questions and answers. March 1988. 1 v. (various pagings) : ill. ; 30 cm. Bibliography: p. 116 (Appendix A). (NAL Call No.: DNAL SB955.F82 1988).

0605

Pesticide resistance in *Tribolium castaneum* (Coleoptera: Tenebrionidae) and *Rhyzopertha dominica* (Coleoptera: Bostrichidae) in wheat. JEENAI. Zettler, J.L. Cuperus, G.W. Lanham, Md. : Entomological Society of America. Eight strain of red flour beetle, *Tribolium castaneum*(Herbst), and 21 of the lesser grain borer, *Rhyzopertha dominica* (F.), collected from wheat stored on farms in Oklahoma were tested for resistance to malathion, chlorpyrifos-methyl, and phosphine. Results of discriminating dose tests of the red flour beetle indicated that all strains were

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resistant to malathion, one strain was resistant to phosphine, and none was resistant to chlorpyrifos-methyl. Similar discriminating dose tests for the lesser grain borer indicated that all strains were resistant to malathion, dichloro, and to chlorpyrifos-methyl, and 8 of 21 strains were resistant to phosphine. Journal of economic entomology. Oct 1990. v. 83 (5). p. 1677-1681. maps. Includes references. (NAL Call No.: DNAL 421 J822).

0606

Phosphine and methyl bromide permeation of fabric and multiwall paper bags (Control of stored product insects).

Leesch, J.G. JEENA. Highland, H.A. College Park : Entomological Society of America. Journal of economic entomology. Oct 1982. v. 75 (5). p. 819-821. Includes references. (NAL Call No.: 421 J822).

0607

Phosphine fumigation of thick-film polyethylene food bags and laminated film food packets (Tribolium castaneum, residues).

Highland, H.A. Leesch, J.G.; Cline, L.D.; Zehner, J.M. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1984. v. 77 (4). p. 1041-1045. Includes 7 references. (NAL Call No.: 421 J822).

0608

Phosphine fumigation of (USA) corn in-transit on a (Polish) bulk-dry cargo ship (for storage pest control).

Gillenwater, H.B. Redlinger, L.M.; Zettler, J.L.; Davis, R.; McDonald, L.L.; Zehner, J.M. Athens, Ga., The Society. Journal of the Georgia Entomological Society. Oct 1981. v. 16 (4). p. 462-475. ill. 4 ref. (NAL Call No.: QL461.G4).

0609

Phytotoxic reaction of Hawaiian cut flowers and foliage to hydrogen cyanide fumigation.

HUJSA. Hansen, J.D. Chan, H.T. Jr.; Hara, A.H.; Tenbrink, V.L. Alexandria, Va. : American Society for Horticultural Science. HortScience. Jan 1991. v. 26 (1). p. 53-56. Includes references. (NAL Call No.: DNAL SB1.H6).

0610

Postharvest treatments for insect control.

Mitchell, F.G. Kader, A.A. Berkeley, Calif. : Coop Ext, Univ of California, Div of Agric and Natural Resources, 1985. Postharvest technology of horticultural crops / Adel A. Kader et al. . p. 100-103. Includes references. (NAL

Call No.: DNAL SB319.7.P67).

0611

Potential of two perfluorinated alcohols as fumigants (Tribolium confusum Lasioderma serricorne, Attageus megatoma, Sitophilus oryzae, non-food plant products).

Leesch, J.G. Sukkestad, D.R. College Park, Md., Entomological Society of America. Journal of economic entomology. Dec 1980. v. 73 (6). p. 829-831. 5 ref. (NAL Call No.: 421 J822).

0612

Practical fumigation considerations.

Cuperus, G.W. Noyes, R.T.; Criswell, J. Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 3-24. ill. Includes references. (NAL Call No.: DNAL 275.29 OK41C).

0613

Quarantine procedure for Hawaii papaya, using a hot-water treatment and high-temperature, low-dose ethylene dibromide fumigation.

JEENAI. Couey, H.M. Armstrong, J.W.; Hylin, J.W.; Thornburg, W.; Nakamura, A.N.; Linse, E.S.; Ogata, J.; Vetro, R. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1985. v. 78 (4). p. 879-884. Includes references. (NAL Call No.: DNAL 421 J822).

0614

Reduction in almond moth (Lepidoptera: Pyralidae) infestations using commercial packaging of foods in combination with the parasitic wasp, Bracon hebetor (Hymenoptera: Braconidae).

JEENAI. Cline, L.D. Press, J.W. Lanham, Md. : Entomological Society of America. Bracon hebetor Say significantly reduced Cadra cautella (Walker) infestations in and around commercially packaged raisins and cornmeal. However, the parasite failed to prevent the extremely vulnerable cornmeal packages and the moderately insect-resistant raisin packages from being infested. The merits of insect-resistant packaging in conjunction with biological controls are discussed. Journal of economic entomology. June 1990. v. 83 (3). p. 1110-1113. Includes references. (NAL Call No.: DNAL 421 J822).

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0615

Regulatory actions affecting the use of ethylene dibromide in quarantine fumigation of citrus fruits (Florida).

Ismail, M.A. Craig, J.O.; Miller, W.M. S.I., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. 1981 (pub. 1982). v. 94. p. 263-266. Includes 16 ref. (NAL Call No.: 81 F66).

0616

Release of sterile Mexican fruit flies for control of feral populations in the Rio Grande Valley of Texas and Mexico (An alternate to fruit fumigation).

Holler, T.C.JRGVA. Davidson, J.L.; Suarez, A.; Garcia, R. Weslaco : The Society. Journal - Rio Grande Valley Horticultural Society. 1984. v. 37. p. 113-121. ill. (NAL Call No.: 81 L95).

0617

Replacing fumigants with beneficial insects.

AGREA. Kinzel, B. Washington, D.C. : The Service. Agricultural research - U.S. Department of Agriculture, Agricultural Research Service. Feb 1991. v. 39 (2). p. 14-16. (NAL Call No.: DNAL 1.98 AG84).

0618

Residues of ethylene dibromide present in fumigated fiberboard carton material (prevention of fruit fly infestation).

King, J.R. AR-SO. Von Windeguth, D.L.; Burditt, A.K. Jr. s.l., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. June 1, 1980. v. 92. p. 163-165. ill. 3 ref. (NAL Call No.: 81 F66).

0619

Resistance of stored product insects to fumigants.

Bond, E.J. Manhattan : Kansas State University, 1984. Proceedings of the Third International Working Conference on Stored-Product Entomology : Oct 23-28, 1983, Kansas State Univ., Manhattan, Kansas / spon. Dept. of Entomology and Dept. of Grain Science a. p. 303-307. Includes references. (NAL Call No.: DNAL SB937.I5 1983).

0620

Responses of cherries, nectarines, peaches, pears and plums to fumigation with methyl bromide for control of Mediterranean fruit fly (*Ceratitidis capitata*, USA, quarantine, ripening, phytotoxicity).

Harvey, J.M.PFSA. Harris, C.M. Lake Alfred : The Society. Proceedings of the ... annual

meeting - Florida State Horticultural Society. 1982. v. 95. p. 229-231. Includes references. (NAL Call No.: 81 F66).

0621

A review of in-transit shipboard fumigation of grain--methodology, efficacy and safety.

Davis, R. Manhattan : Kansas State University, 1984. Proceedings of the Third International Working Conference on Stored-Product Entomology : Oct 23-28, 1983, Kansas State Univ., Manhattan, Kansas / spon. Dept. of Entomology and Dept. of Grain Science a. Literature review. p. 346-356. Includes references. (NAL Call No.: DNAL SB937.I5 1983).

0622

Safety measures in handling stored grain.

Kramer, J.A. Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 53-59. ill. Includes references. (NAL Call No.: DNAL 275.29 OK41C).

0623

The search for a safe, effective spot fumigant for use in breweries.

Klimovitz, R.J. Milwaukee, Wis.? : The Association?, 1985? . Proceedings, Barley Insect Conference : January 9, 1985, Minneapolis Plaza Hotel, Minneapolis, Minnesota / sponsored by American Malting Barley Association. p. 11-13. (NAL Call No.: DNAL SB608.B2B2 1985).

0624

Seasonal variation in tolerance of Florida 'Marsh' grapefruit to a combination of methyl bromide fumigation (against) (*Caribbean fruit fly*, *Anastrepha suspensa*) and cold storage.

Benschoter, C.A. AR-SO. s.l., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. June 1, 1980. v. 92. p. 166-167. 8 ref. (NAL Call No.: 81 F66).

0625

Simulations comparing insect species differences in response to wheat storage conditions and management practices.

JEENAI. Hagstrum, D.W. Flinn, P.W. Lanham, Md. : Entomological Society of America. Seasonal changes in the populations of *Cryptolestes ferrugineus* (Stephens), *Oryzaephilus surinamensis* (L.), *Rhyzopertha dominica* (F.), *Sitophilus oryzae* (L.), and *Tribolium castaneum* (Herbst) and differences in their response to pest management programs were compared using

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validated population-growth-simulation models. The population growth of the five pest species differed in response to temperature and grain moisture conditions during storage, and this partially explains differences among species in their response to management practices. Aerating earlier in the storage season was generally more effective in limiting population growth of *C. ferrugineus* and *O. surinamensis* than the other species. Although fumigation was equally effective against all species, *S. oryzae* was able to grow more rapidly than the others as temperatures decreased in the fall. The internal feeders, *R. dominica* and *S. oryzae*, were much less affected by malathion protectant than the other three external-feeding species. As indicated by these three examples, it would sometimes be advantageous to know which species are present in choosing a management program. *Journal of economic entomology*. Dec 1990. v. 83 (6). p. 2469-2475. Includes references. (NAL Call No.: DNAL 421 J822).

0626

Simulations comparing the effectiveness of various stored-grain management practices used to control *Rhyzopertha dominica* (Coleoptera: Bostrichidae).
EVETEX. Flinn, P.W. Hagstrum, D.W. Lanham, Md. : Entomological Society of America. A simulation model for the population dynamics of *Rhyzopertha dominica* (F.) was used to compare the effectiveness of various stored-wheat management programs in controlling this insect in the United States. Infestations on day 365 were reduced 88 times when wheat was harvested and stored in August instead of June, 34 times by aerating the grain in September instead of November, 20 times by storing grain at 10% instead of 14% moisture content, 18 times by fumigating in August or September instead of July, four times when wheat was stored at 27 degrees C instead of 32 degrees C, and approximately three times when malathion was used as a protectant. The model simulations provide an overview of the relative advantages of various approaches to managing stored-grain insects in various geographic localities. *Environmental entomology*. June 1990. v. 19 (3). p. 725-729. Includes references. (NAL Call No.: DNAL QL461.E532).

0627

Some fumigant properties of hexamethyl distannane against stored-product insects (*Tribolium confusum*, *Lasioderma serricorne*, *Attageus megatoma*, *Sitophilus oryzae*).
Leesch, J.G. GENSA. Sukkestad, D.R. Athens : The Society. *Journal of the Georgia Entomological Society*. July 1983. v. 18 (3). p. 385-394. Includes references. (NAL Call No.: QL461.G4).

0628

Spot fumigation.

Dawson, J.C. St. Paul, Minn. : American Association of Cereal Chemists, c1984. Insect management for food storage and processing / edited by Fred J. Baur. p. 173-178. ill. (NAL Call No.: DNAL SB937.I49).

0629

Status of efforts to meet Japanese import quarantine requirements for apples.

WSEPA. Moffitt, H. Pullman, Wash. : The Society. *Proceedings of the Washington State Entomological Society*. Meeting held on April 23 and September 17, 1988, Yakima, Washington. 1988. (50). p. 863-864. (NAL Call No.: DNAL QL461.W3).

0630

Stored grain insect control.

Sargent, James E. 1980. This discusses stored grain pests, pre-storage pest prevention, storage prevention, and control of infestations. Document available from: Ext. Office of Information, Ohio State Univ., 2120 Fyffe Road, Columbus, OH 43210. 6 p. (NAL Call No.: Not available at NAL.). (NAL Call No.: L153).

0631

Stored grain insect control / author, Harold R. Willson .

Willson, Harold R. Columbus, Ohio? : Ohio Cooperative Extension Service, Ohio State University, 1988? . Abstract: Basic steps of a grain pest management program including sanitation and chemical treatments of the empty storage facility, application of grain protectants, grain monitoring and management, and corrective pest control procedures, particularly solid formulations of aluminum phosphide fumigant and the gas fumigant methyl bromide are discussed. Descriptions and illustrations of stored grain pests, equations for grain storage calculations and a poison information centers list are provided. Cover title.~ "1/88-2M J.51355"--P. 2.~ "Agdex 400/623.". 15 p. : ill. ; 28 cm. (NAL Call No.: DNAL 275.29 OH32 no.153).

0632

Stored grain insect control /by Donald R. Johnson and Bill F. Jones.

Johnson, Donald R. Jones, Bill F. Little Rock, Ark. : Cooperative Extension Service, University of Arkansas, U.S. Dept. of Agriculture, and county governments cooperating, 1987 . Abstract: This leaflet covers stored grain insects, sources of infestation, and five prevention and control strategies including sanitation, preventive

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spray treatments and fumigation. Features illustrations of immature and adult internal and external feeding insects. Caption title.~ "EL412-7M-9-87RV"--P. 11. 11 p. : ill. ; 23 cm. (NAL Call No.: DNAL 275.29 Ar4Le no.412 1987).

0633

Stored grain insect control in Oklahoma.
Coppock, S. Stillwater, Okla. : The Service. OSU extension facts - Cooperative Extension Service, Oklahoma State University. June 1991. (7180,rev.). 8 p. (NAL Call No.: DNAL S544.3.0505).

0634

Stored grain pest management.
MUCBA. Ruppel, R.F. East Lansing, Mich. : The Service. Extension bulletin E - Cooperative Extension Service, Michigan State University. 1991? . (2036). 8 p. (NAL Call No.: DNAL 275.29 M58B).

0635

Stored grain pest management /edited by James H. Cink and Phillip K. Harein.
Cink, James.; Harein, Phillip. St Paul, Minn. : Dept. of Entomology, Minnesota Extension Service, University of Minnesota, 1989 . Developed as a guide for training stored grain pest managers in the areas of fumigation, this manual is designed to provide information to assists stored grain managers in solving pest problems and in preparing the state certification in commercial or non-commercial fumigation. Fumigation principles and safety, types and methods of fumigation, application procedures and specific fumigants are discussed. Additional major topics include: rodents and their control; pest bird management; other pest animals; weeds; pesticides; formulations; laws and regulations; labels; toxicity; human and environmental protection; calibration; grain protectants and application equipment. Includes sample checklists for: prefumigation building inspection, fumigation and fumigant clearance; a glossary; and study questions and answers. Title on pamphlet: Stored grain insects and molds. 1 v. (various paging) : ill. ; 28 cm. + picture sheets. (NAL Call No.: DNAL SB190.S762).

0636

Stored products pest control category 7B / F. Robert Henderson ... et al. .
Henderson, F. Robert. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1986 . Abstract: Designed for commercial pesticide applicators, this manual provides information on the life cycles of stored product insects, the biology of vertebrate pests (rats, mice and birds) and

their control. It explains how to properly and safely apply pesticides in food plants and fumigants. This study guide contains practice multiple choice questions. Cover title.~ At head of title: Commercial pesticide applicator certification and recertification study manual.~ "S-16, July 1986"--P. 4 of cover. 42 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB937.S7 1986).

0637

Structural fumigation in pest management.
MUCBA. Moore, R.L. Mesecher, R.L.; Bird, G.; Ruppel, R.F.; Brown, A. East Lansing, Mich. : The Service. Extension bulletin E - Cooperative Extension Service, Michigan State University. 1990? . (2053). 41 p. (NAL Call No.: DNAL 275.29 M58B).

0638

Structural, institutional and health related, subcategory: fumigation : commercial pesticide applicators manual. -.
Russell, Harold G.; Evenson, M. R. & Commercial pesticide applicators manual. (Stillwater) Oklahoma State University, Cooperative Extension Service (1980?). Cover title ~Pesticide Applicators Training collection ~"This manual was adopted for Oklahoma from a certificate manual that was prepared by Harold G. Russell, Jr. ... with additions by M. R. Evenson ..." -- Preface. 32 p. : ill. ; 28 cm. (NAL Call No.: SB955.S7).

0639

Studies of phosphine as a fumigant for sacked rice under gas-tight tarpaulins.
JEENAI. Cogburn, R.R. Tilton, E.W. College Park, Md. : Entomological Society of America. Two series of experimental fumigations were performed in 1959 and 1960 to evaluate the effectiveness of phosphine at various dosages for insect control in stacks of sacked rough and milled rice covered with gas-tight tarpaulins. The effect of the gas on adult and immature stages of rice weevils, *Sitophilus oryzae* (L.), and adult confused flour beetles, *Tribolium confusum* Jacqueline du Val, and on germination of seed rice was observed. The gas concentration was analyzed at regular intervals. Complete control of adults of both species was obtained from all dosages used. Grain temperatures in the second series of tests were much higher than those in the first series, and this appeared to alter the performance of the fumigant significantly. A dosage between 73 and 121 aluminum phosphide tablets per 1,000 cubic feet was required to kill 100% of immature rice weevils in rough rice when the temperature averaged between 52 degrees and 58 degrees F. Fifty tablets per 1,000 cubic feet proved to be an ample dosage in milled rice at an average temperature between 80 degrees and 90 degrees F. Germination of seed rice was not affected by

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fumigation with any dosage or combination of dosages of phosphine that was used under the conditions of this test. Journal of economic entomology. Oct 1963. v. 56 (5). p. 706-708. Includes references. (NAL Call No.: DNAL 421 J822).

0640

Temperature control as an alternative to ethylene dibromide fumigation for the control of fruit flies (Diptera: Tephritidae) in papaya (*Dacus dorsalis*).

Hayes, C.F. Chingon, T.G.; Nitta, F.A.; Wang, W.J. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1984. v. 77 (3). p. 683-686. Includes references. (NAL Call No.: 421 J822).

0641

Three methods of aluminum phosphide application for the in-transit fumigation of grain aboard deep-draft bulk cargo ships.

JEENAI. Leesch, J.G. Arthur, F.H.; Davis, R. Lanham, Md. : Entomological Society of America. Three methods of applying aluminum phosphide were tested aboard a deep-draft vessel to determine the suitability of each method for fumigating grain in transit. Results showed that all three methods were highly effective with only low levels of phosphine residues resulting in the wheat. However, the recirculation method provided faster and more even distribution of phosphine throughout the grain mass than did the two passive methods. After a fumigation exposure of 26 d, all insects exposed at positions where concentration X time (C X T) values were > 1.0 were killed. As tested in this study, all three methods posed no hazards to the ship's crew or to dock workers unloading the cargo at destination. Journal of economic entomology. Aug 1990. v. 83 (4). p. 1459-1467. Includes references. (NAL Call No.: DNAL 421 J822).

0642

Tolerance of Florida avocado cultivars to methyl bromide fumigation treatments effective against fruit flies (Tephritidae).

Witherell, P.C. PFSHA. Spalding, D.H.; Benschoter, C.A. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 227-229. Includes references. (NAL Call No.: 81 F66).

0643

Tolerance of Florida 'Marsh' grapefruit to methyl bromide fumigation and cold storage combination treatments effective against the Caribbean fruit fly (*Anastrepha suspensa*).

Benschoter, C.A. S.I., The Society. Proceedings of the ... annual meeting of the Florida State

Horticultural Society. 1981 (pub. 1982). v. 94. p. 301-303. Includes 4 ref. (NAL Call No.: 81 F66).

0644

Tolerances of California nectarine cultivars to methyl bromide quarantine treatments.

JOSHB. Harvey, J.M. Harris, C.M.; Hartsell, P.L. Alexandria, Va. : The Society. The tolerance of six cultivars of nectarine *Prunus persica* (L.) Batsch var. *nectarina* (Ait.) Maxim. to methyl bromide (MB) quarantine treatments was determined. A treatment, 48 g MB/m³ for 2 hr at 21C, which controlled codling moth *Cydia pomonella* (L.), caused no significant phytotoxic response in any of the cultivars. The threshold for injury at the above time and temperature was approximately 64 g MB/m³ in 'Summer Grand', 'May Grand', 'Fantasia', and 'Firebrite'; between 48 and 64 g MB/m³ in 'Red Diamond'; and between 80 and 96 g MB/m³ in 'Spring Red'. All fumigated nectarines were significantly firmer than the control fruit after storage for 7 days at 2.5C, but subsequently ripened satisfactorily; soluble solids content of the fruit was not affected by the fumigations used in this study. Inorganic bromide residues in fruit treated with the 48 g/m³ dosage at 21C or above ranged from 3.5 to 7.2 ppm, well below the U.S. tolerance of 20 ppm. Organic bromide residues were less than 0.01 ppm within 48 hr after treatment. Journal of the American Society for Horticultural Science. July 1989. v. 114 (4). p. 626-629. Includes references. (NAL Call No.: DNAL 81 S012).

0645

Update on the use and status of methyl bromide for barley insect control.

White, L.V. Milwaukee, Wis.? : The Association?, 1985? . Proceedings, Barley Insect Conference : January 9, 1985, Minneapolis Plaza Hotel, Minneapolis, Minnesota / sponsored by American Malting Barley Association. p. 7-8. (NAL Call No.: DNAL SB608.B2B2 1985).

0646

Update on the use and status of phosphine products for barley insect control.

Wilbur, D.A. Milwaukee, Wis.? : The Association?, 1985? . Proceedings, Barley Insect Conference : January 9, 1985, Minneapolis Plaza Hotel, Minneapolis, Minnesota / sponsored by American Malting Barley Association. p. 9-10. (NAL Call No.: DNAL SB608.B2B2 1985).

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0647

Use of carbon dioxide to disinfest a tobacco warehouse of the cigarette beetle.

Keever, D.W. Clemson, S.C. : South Carolina Entomological Society. Journal of agricultural entomology. Jan 1989. v. 6 (1). p. 43-51. ill. Includes references. (NAL Call No.: DNAL SB599.J69).

0648

Use of perforated tubing to distribute phosphine during the in-transit fumigation of wheat.

JEENAI. Leesch, J.G. Davis, R.; Zettler, J.L.; Sukkestad, D.R.; Zehner, J.M.; Redlinger, L.M. College Park, Md. : Entomological Society of America. Journal of economic entomology. Dec 1986. v. 79 (6). p. 1583-1589. ill. Includes references. (NAL Call No.: DNAL 421 J822).

0649

Vacuum fumigation with ethyl formate to control the green peach aphid in packaged head lettuce (*Myzus persicae*).

Stewart, J.K. JOSH. Aharoni, Y. Alexandria : The Society. Journal of the American Society for Horticultural Science. Mar 1983. v. 108 (2). p. 295-298. ill. Includes references. (NAL Call No.: 81 S012).

0650

Western cherry fruit fly (Diptera: Tephritidae): fumigation with methyl bromide at selected fruit temperatures (*Laspeyresia pomonella*, *Rhagoletis indifferens*).

Moffitt, H.R. Fountain, J.B.; Hartsell, P.L.; Albano, D.J. College Park, Md. : Entomological Society of America. Journal of economic entomology. Feb 1983. v. 76 (1). p. 135-138. Includes references. (NAL Call No.: 421 J822).

0651

1988 insect pest management guide stored grain /prepared by Richard A. Weinzierl.

Weinzierl, Richard A. Urbana, Ill. : University of Illinois at Urbana-Champaign, College of Agriculture, Cooperative Extension Service, 1987. Abstract: This annually revised guide contains insecticide and cultural control recommendations for managing stored-grain insect pests. Integrated pest management (IPM) concepts and applicator certification requirements for applying insecticides and fumigants are discussed. Addresses and telephone numbers of Illinois Poison Resource Centers and sources of additional information are provided. Caption title. ~ "November 1987.". 7 p. ; 28 cm. Includes bibliographical references (p. 7). (NAL Call No.: DNAL 275.29 I162C no.1242 1987).

0652

1988 Oklahoma Grain Elevator Workshops February 2, Chickasha, February 3, Enid, February 4, Woodward /sponsored by Cooperative Extension Service, Division of Agriculture, Oklahoma State University ; in cooperation with Farmers Cooperative Grain Dealers Association of Oklahoma, Oklahoma Grain and Feed Association, Oklahoma Wheat Commission.

Stillwater, Okla.? : The Service, 1988. Abstract: This manual is composed of the presentations given at the 1988 Oklahoma Grain Elevator Workshops held February 2-4. Topics covered include overview of grain industry, one year sequence of stored grain management; storage production and chemical insect control; receiving and handling; grain blending; fumigation; integrated pest management; and aeration of commercial grain structures. Grain elevator maintenance guides, inspection checklists and housekeeping reports are provided. Cover title. 1 v. (various pagings) : ill. ; 29 cm. (NAL Call No.: DNAL SB190.04 1988).

0653

1990 Proceedings: Fumigation Workshop.

Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Jan 1989. (888). 119 p. (NAL Call No.: DNAL 275.29 OK41C).

WEEDS

0654

Basic guide to weeds and herbicides /Mark A. Ferrell, Thomas D. Whitson, Stephen D. Miller.

Ferrell, Mark A. Whitson, Thomas D.; Miller, Stephen D. Laramie, WY : Cooperative Extension Service, College of Agriculture, University of Wyoming : University of Wyoming, Dept. of Plant, Soil and Insect Sciences, 1990? .

Abstract: This manual for pesticide applicators using herbicides in Wyoming covers techniques used to control, prevent and eradicate weeds. Translocated herbicides, contact herbicides, soil sterilization and soil fumigation are described. Factors that influence the effectiveness of treatment, herbicide formulations and recommendations for combining herbicides are discussed. iv, 24 p. ; 28 cm. Includes bibliographical references (p. 24). (NAL Call No.: DNAL SB951.4.F48).

0655

Comparative control of soilborne pests on tomato and pepper by soil fumigation.

McSorley, R. McMillan, R.T.; Parrado, J.L.

s.l. : The Society. Proceedings of the ... annual meeting of the Florida State Horticulture Society. 1986 (pub. 1987). v. 99. p. 350-353. Includes references. (NAL Call No.: DNAL SB319.2.F6F56).

0656

Dazomet use for seedbed fumigation at the PFRA Shelterbelt Centre, Indian Head, Saskatchewan.

Alsop, L.K. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 40-42. ill. Includes references. (NAL Call No.: DNAL aSD11.A42).

0657

Effect of soil fumigation and alternate-year seeding on weed control, bacterial spot incidence, and yield of pepper transplants.

Jaworski, C.A. AR-SO. McCarter, S.M.; Glaze, N.C. Alexandria, Va., American Society for Horticultural Science. HortScience. Oct 1980. v. 15 (5). p. 650-652. 11 ref. (NAL Call No.: SB1.H6).

0658

Effective use of Metham for weed control.

Qualls, M.G. Fremont, Calif. : California Weed Conference. Proceedings - California Weed Conference. Meeting held January 21-23, 1991, Santa Barbara, California. 1991. (43rd). p. 183-184. (NAL Call No.: DNAL 79.9 C122).

0659

Effectiveness of methyl bromide on weeds, grass, insects, and soil diseases.

Brown, M.E. Fremont, Calif. : California Weed Conference. Proceedings - California Weed Conference. Meeting held January 21-23, 1991, Santa Barbara, California. 1991. (43rd). p. 185-187. Includes references. (NAL Call No.: DNAL 79.9 C122).

0660

Evaluation of sodium methyldithiocarbamate as a fumigant to decrease viability of goatsrue seed in the field.

Evans, J.O. Peitersen, B.G. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1987. p. 353. (NAL Call No.: DNAL 79.9 W52R).

0661

Forest spraying pesticide applicator's training manual /prepared by extension specialists at the University of Minnesota.

St. Paul, Minn. : Minnesota Extension Service, University of Minnesota, 1987. Abstract: This guide for the Minnesota commercial agricultural pesticide applicator is prepared as a training aid for those applicators who wish to become certified to apply or supervise the application of "restricted-use" pesticides in Minnesota forests. The principles of forest pest management, the identification and control of insect, weed, disease and vertebrate pests, application equipment, calibration techniques, pesticide formulation, fumigation principles and other treatment methods are discussed. The toxicity of pesticides and their potential danger to humans, environmental hazards, safety precautions, label information, protective clothing, storage, and disposal are covered. A bibliography, questions and answers, and a glossary complete this manual. Cover title.~ "9/87."~ "G4418." vi, 268 p. : ill. ; 28 cm. Includes bibliographical references (p. 195). (NAL Call No.: DNAL SB952.863.M6F6).

0662

How soil fumigation benefits the California strawberry industry (Weeds and Verticillium wilt control).

Wilhelm, S. Paulus, A.O. St. Paul, Minn., American Phytopathological Society. Plant disease. Mar 1980. v. 64 (3). p. 264-270. ill. 20 ref. (NAL Call No.: 1.9 P69P).

0663

How to use methyl bromide (Soil fumigant).
Brown, E.A. II. Athens, Ga., The Service.
Leaflet - Cooperative Extension Service,
University of Georgia. May 1982. May 1982.
(17). 4 p. 111. (NAL Call No.: 275.29 G29L).

0664

Managing perennial weeds in the nursery.
Meade, J.A. New Brunswick, N.J. : The Service.
FS - Cooperative Extension Service, Cook
College. Feb 1991. (565). 2 p. (NAL Call No.:
DNAL S544.3.N5F7).

0665

**Methyl bromide fumigation at the Lone Peak
State Forest Nursery, Utah.**
Grierson, D.G. Fort Collins, Colo. : The
Station. General technical report RM - Rocky
Mountain Forest and Range Experiment Station,
U.S. Department of Agriculture, Forest Service.
Paper presented at the Intermountain Forest
Nursery Association Meeting, August 14-18,
1989, Bismark, North Dakota. Dec 1989. (184).
p. 38-39. (NAL Call No.: DNAL aSD11.A42).

0666

**Nursery weed control with herbicides or
fumigation--an economic evaluation (Southern
pines).**
South, D.B. Gjerstad, D.H. Washington, D.C.,
Society of American Foresters. Southern journal
of applied forestry. Feb 1980. v. 4 (1). p.
40-45. 111. 31 ref. (NAL Call No.: SD1.S63).

0667

**Preventing weeds in home gardens using soil
fumigation.**
WUEXA. Peabody, D.V. Howard, S.; Parker, R.
Pullman, Wash. : The Service. Extension
bulletin - Washington State University,
Cooperative Extension Service. In subseries:
Western Washington Weed Control Guide. May
1988. (1062,rev.). 2 p. (NAL Call No.: DNAL
275.29 W27P).

0668

**Recent approaches for chemical control of
broomrape (Orobanchae spp.).**
Foy, C.L. Jain, R.; Jacobsohn, R. Champaign,
Ill. : Weed Science Society of America. Reviews
of weed science. June 1989. v. 4. p. 123-152.
111. Includes references. (NAL Call No.: DNAL
SB610.R47).

0669

Selective black nightshade control in tomatoes.
CAGRA. Lange, A.H. Orr, J.P.; Mullen, R.J.;
Miayo, E.M.; Clement, L.D.; Edson, W.D.
Berkeley : The Station. California agriculture
- California Agricultural Experiment Station.
Jan/Feb 1986. v. 40 (1/2). p. 26-27. 111. (NAL
Call No.: DNAL 100 C12CAG).

0670

**Soil fumigants for tomato production on
Rockdale soils.**
McSorley, R. McMillan, R.T. Jr.; Parrado, J.L.
s.l. : The Society. Proceedings of the ...
annual meeting of the Florida State
Horticulture Society. 1986. v. 98. p. 232-237.
Includes references. (NAL Call No.: DNAL
SB319.2.F6F56).

0671

Strawberry weed management in Michigan.
ARHMA. Bonanno, R. East Lansing, Mich. : The
Society. Annual report - Michigan State
Horticultural Society. 1987. (117th). p.
156-162. (NAL Call No.: DNAL 81 M58).

0672

**Weed control after chemigation with low rates
of metham (Soil fumigant on New Jersey
vegetable farms).**
Teasdale, J.R. PNWSB. Adams, P.B.; Johnston,
S.A. Beltsville : The Society. Proceedings -
annual meeting of the Northeastern Weed Science
Society. 1983. 1983. (37th). p. 258-262.
Includes references. (NAL Call No.: 79.9 N814).

0673

**Weed control in strawberry nursery (DCPA,
diphenamid, chloroxuron, methyl bromide,
Florida).**
Albregts, E.E. Howard, C.M. S.l., The Society.
Proceedings of the ... annual meeting of the
Florida State Horticultural Society. 1981 (pub.
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Call No.: 81 F66).

0674

Weed control in the strawberry summer nursery.
Gilreath, J.P. Albregts, E.E. s.l. : The
Society. Proceedings of the ... annual meeting
of the Florida State Horticulture Society.
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(NAL Call No.: DNAL SB319.2.F6F56).

(WEEDS)

0675

Weed control with herbicides or fumigation at a forest nursery.

South, D. AL. Auburn, The Station. Highlights of agricultural research. Alabama. Agricultural Experiment Station. Spring 1980. v. 27 (1). p. 14. ill. (NAL Call No.: 100 AL1H).

PESTICIDES - GENERAL

0676

Ag chemical industry continues to develop better pest controls (Includes thylene dibromide, soil fumigants, herbicides).
Phoenix, Ariz. : Elliott L. Cushman. Arizona farmer rancher. May 1984. v. 63 (5). p. 4-7. (NAL Call No.: 6 AR44).

0677

Agricultural chemicals Book II Miscellaneous chemicals fumigants, growth regulators, repellents, and rodenticides /by W.T. Thomson.
Thomson, W. T. Fresno, CA : Thomson Publications, c1988. Cover title: Agricultural chemicals, Book III -- fumigants, growth regulators, repellents, and rodenticides.~ Includes index. xviii, 210 p. : ill. ; 23 cm. (NAL Call No.: DNAL SB951.T48 1988).

0678

Agricultural commodity fumigation / prepared by Herbert Womack .
Womack, Herbert. Athens : Cooperative Extension Service, University of Georgia, College of Agriculture, 1989? . Abstract: Major topics covered in this manual include identification and life cycles of agricultural commodity insect pests; types of fumigants; factors affecting their effectiveness; safety; and proper application techniques. A pictorial key to beetles infesting stored foods and a formula chart for calculation volume are provided. Cover title.~ "Developed in cooperation with the Georgia Department of Agriculture.". 23 p. : ill. ; 28 cm. Includes bibliographical references. (NAL Call No.: DNAL SB950.A1S62 no.26).

0679

Analysis of methyl bromide at ultra low concentration levels.
JAFCAU. Dumas, T. Bond, E.J. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Mar/April 1985. v. 33 (2). p. 276-278. Includes references. (NAL Call No.: DNAL 381 J8223).

0680

Applicator's manual for Degesch Phostoxin pellets and tablets-R.
Weyers Cave, Va. : Degesch America, Inc., 1987? . Abstract: This Applicator's Manual for DEGESCH Phostoxin Pellets and Tablets-R, Restricted Use Pesticides and fumigants to protect stored commodities from insect damage and to control burrowing pests, includes precautionary statements, directions for use, information on protective clothing, respiratory protection requirements and devices, applicator and worker exposure, aeration of fumigated commodities, storage, disposal and spill and

leak procedures. Cover title. i, 17 p. ; 28 cm. (NAL Call No.: DNAL SB955.A6).

0681

Apply pesticides correctly a guide for commercial applicators : food processing pest control / editors, Mary Ann Wamsley and Donna M. Vermeire .
Wamsley, Mary Ann.; Vermeire, Donna M. Knoxville, Tenn.? : University of Tennessee, Agricultural Extension Service in cooperation with U.S. Environmental Protection Agency, 1988? . Abstract: Applicants for Food Processing Pest Control certification in the state of Tennessee will find the basic information necessary to meet the specific requirements and standards in the food and feed industries in this manual. The types of pests and methods of control are surveyed. Advantages and limitations of aerosol, liquid, dust, granule, bait, fumigants and vapors are highlighted. Cover title.~ "EC 1011.". 12 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB937.A6).

0682

Applying pesticides correctly a guide for private and commercial applicators.
Columbus, Ohio? : Ohio State University, Cooperative Extension Service, 1989. Abstract: This guide for private and commercial applicators explains how to properly and safely apply pesticides, understand pesticide labels, select pesticides, and choose and calibrate equipment. Information on pests, pesticide laws and regulations, protective clothing, poisoning symptoms and first aid is provided. It contains a pesticide index, defined terms, a table listing effects of pesticides on the body, calibration formulae and examples, and drawings. Cover title.~ "Reprinted 12/89-5M-70942"--P. 4 of cover.~ Agdex 600.~ Includes index. 122 p. : ill. ; 28 cm. (NAL Call No.: DNAL 275.29 OH32 no.713).

0683

Banning soil fumigants: what cost?.
Barse, J.R. Ferguson, W.L. Rockville, Md. : The Service. Agricultural outlook AD - U.S. Department of Agriculture, Economic Research Service. June 1989. (153). p. 32-34. (NAL Call No.: DNAL aHD1751.A42).

0684

Bibliography of fumigation, 1980 /compiled by Lawrence J. Pinto. --.
Pinto, Lawrence J. Vienna, Va. : National Pest Control Association, 1980 . Cover title.~ At head of title: National Pest Control Association.~ Includes index. vi, 30 leaves ; 28 cm. (NAL Call No.: DNAL Z5074.P4P56).

(PESTICIDES - GENERAL)

0685

Biodegradation of Halogenated hydrocarbon fumigants by nitrifying bacteria.

APMBA. Rasche, M.E. Hyman, M.R.; Arp, D.J. Washington, D.C. : American Society for Microbiology. Three species of nitrifying bacteria were tested for the ability to degrade the halocarbon fumigants methyl bromide, 1,2-dichloropropane, and 1,2-dibromo-3-chloropropane. The soil nitrifiers *Nitrosomonas europaea* and *Nitrosolobus multiformis* degraded all three fumigants, while the marine nitrifier *Nitrosococcus oceanus* degraded only methyl bromide under the conditions tested. Inhibition of biodegradation by allylthiourea and acetylene, specific inhibitors of ammonia monooxygenase, suggests that ammonia monooxygenase is the enzyme which catalyzes fumigant degradation. Applied and environmental microbiology. Aug 1990. v. 56 (8). p. 2568-2571. Includes references. (NAL Call No.: DNAL 448.3 AP5).

0686

The Biologic and economic assessment of registered fumigants.

Washington, D.C.? : U.S. Dept. of Agriculture, 1986? . "This report is a joint project of the U.S. Department of Agriculture, and State Land-Grant Universities."--Pref. 1 v. (various pagings) ; 28 cm. Includes bibliographies. (NAL Call No.: DNAL aSB951.B5).

0687

The Biologic and economic assessment of the pesticide ethylene dibromide /prepared jointly by the USDA/State/EPA EDB Assessment Team.

Washington, D.C.? : USDA?, 1980? . "June 1980." 175 p. : map ; 29 cm. Includes bibliographical references (p. 154-175). (NAL Call No.: DNAL aSB952.B7B5).

0688

The Biologic assessment of the pesticide carbon tetrachloride /prepared jointly by the USDA-State-EPA Carbon Tetrachloride Assessment Team.

Washington, D.C.? : USDA?, 1982? . ix, 725, 34 leaves ; 28 cm. Includes bibliographical references (leaves 113-125). (NAL Call No.: DNAL aSB952.C44B5).

0689

Biological monitoring of dichloropropene: air concentrations, urinary metabolite, and renal enzyme excretion.

AEHLA. Osterloh, J.D. Wang, R.; Schneider, F.; Maddy, K. Washington, D.C. : Heldref Publications. Archives of environmental health. July/Aug 1989. v. 44 (4). p. 207-213. Includes

references. (NAL Call No.: DNAL RC963.A1A7).

0690

Chemicals, equipment, and procedures for fumigation / (prepared by Stanley G. Gesell).

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Gesell, Stanley G. University Park Pennsylvania State University, College of Agriculture (1980?). Caption title ~Pesticide Applicator Training collection. 9 p. ; 28 cm. (NAL Call No.: SB955.G47).

0691

Chromatographic and mutagenic analyses of 1,2-dichloropropane and 1,3-dichloropropylene and their degradation products.

BECTA6. Connors, T.F. Stuart, J.D.; Cope, J.B. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. Feb 1990. v. 44 (2). p. 288-293. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

0692

Comparative studies of three soil fumigants for wireworm control by William C. Cook. -.

Cook, William C. (William Carmichael), 1895. Washington, D.C. U.S. Dept. of Agriculture 1949. 22 p. : ill. --. Bibliography: p. 22. (NAL Call No.: Fiche S-69 no.980).

0693

A comparison of ethylene dibromide levels in fumigated fruit fly infested grapefruit and insect mortality (Commodity treatment, fumigation, *Anastrepha suspensa*, residue).

Windeguth, D.L. vonPFSHA. King, J.R. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 219-221. Includes references. (NAL Call No.: 81 F66).

0694

Contamination of ground water as a result of agricultural use of ethylene dibromide (EDB).

Marin, P.A. Droste, E.X. Dublin, OH : The Association, 1986? . Proceedings of the third annual Eastern Regional Ground Water Conference : July 28-30, 1986, Springfield, Massachusetts / Sponsors, National Water Well Association ... et al. . Includes statistical data. p. 277-306. maps. Includes references. (NAL Call No.: DNAL GB1001.2.E27 1986).

0695

Control of the Caribbean fruit fly in Florida grapefruit by phosphine fumigation (*Anastrepha suspensa*, commodity treatment, quarantine, *Citrus pardadisi*, quality).

Hatton, T.T. PFSHA. Cubbedge, R.H.; Windeguth, D.L. von; Spalding, D.H. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 221-224. Includes references. (NAL Call No.: 81 F66).

0696

Control of *Varroa jacobsoni* and *Tropilaelaps clareae* mites using Mavrik in *Apis mellifera* colonies under subtropical and tropical climates.

ABJOA. Lubinevski, Y. Stern, Y.; Slabazki, Y.; Lensky, Y.; Ben-Yossef, H.; Gerson, U. Hamilton, Ill. : Dadant & Sons. American bee journal. Jan 1988. v. 128 (1). p. 48-52. Includes references. (NAL Call No.: DNAL 424.8 AM3).

0697

Controlling house mice.

Timm, Robert M. Henderson, F. Robert. 1979. This discusses house mouse infestation, biology, and control by sanitation, construction, traps, poison baits, and fumigants, and has a table of rodenticides. Document available from: Distribution Center, Umberger Hall, Kansas State University, Manhattan, KS 66506. 4 p. : ill. (NAL Call No.: AF42).

0698

Controlling rats.

Timm, Robert M. Henderson, F. Robert. 1979. This discusses rat habits, reproduction, and control by sanitation, construction, traps, baits and selection, fumigants, predators, and tables of rodenticides. Document available from: Distribution Center, Umberger Hall, Kansas State University, Manhattan, KS 66506. 4 p. : ill. (NAL Call No.: AF43).

0699

Demonstration and research pest control category 10 / Charles E. Long, Erick B. Nilson, Jerry Condray .

Long, Charles E. Nilson, Erick B.; Condray, Jerry. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1987 . Abstract: This certification study guide provides information on pesticide laws, pesticide-organism interactions, Integrated Pest Management (IPM), environmental hazards and safety, and liability concerns. Practice multiple choice questions follow each section. Cover title.~ At head of title: Commercial

pesticide applicator certification and recertification study manual.~ "S-17, September 1987"--P. 4 of cover. 16 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.K2D4 1987).

0700

Dependence of tetrachloroethylene dechlorination on methanogenic substrate consumption by *Methanosarcina* sp. strain DCM.

APMBA. Fathepure, B.Z. Boyd, S.A. Washington, D.C. : American Society for Microbiology. Tetrachloroethylene (perchloroethylene, PCE) is a suspected carcinogen and a common groundwater contaminant. Although PCE is highly resistant to aerobic biodegradation, it is subject to reductive dechlorination reactions in a variety of anaerobic habitats. The data presented here clearly establish that axenic cultures of *Methanosarcina* sp. strain DCM dechlorinate PCE to trichloroethylene and that this is a biological reaction. Growth on methanol, acetate, methylamine, and trimethylamine resulted in PCE dechlorination. The reductive dechlorination of PCE occurred only during methanogenesis, and no dechlorination was noted when CH₄ production ceased. There was a clear dependence of the extent of PCE dechlorination on the amount of methanogenic substrate (methanol) consumed. The amount of trichloroethylene formed per millimole of CH₄ formed remained essentially constant for a 20-fold range of methanol concentrations and for growth on acetate, methylamine, and trimethylamine. These results suggest that the reducing equivalents for PCE dechlorination are derived from CH₄ biosynthesis and that the extent of chloroethylene dechlorination can be enhanced by stimulating methanogenesis. It is proposed that electrons transferred during methanogenesis are diverted to PCE by a reduced electron carrier involved in methane formation. Applied and environmental microbiology. Dec 1988. v. 54 (12). p. 2976-2980. ill. Includes references. (NAL Call No.: DNAL 448.3 AP5).

0701

Determination of aluminum phosphide in fumigants (Fumigation of stored food and feed products, tobacco).

Kao, C. Chicago, Institute of Food Technologists. Journal of food science. Sept/Oct 1981. v. 46 (5). p. 1632, 1634. ill. Includes 5 ref. (NAL Call No.: 389.8 F7322).

0702

Determination of dibromochloropropane and related fumigants in citrus fruit.

JFPRDR. Tonogai, Y. Ito, Y.; Ogawa, S.; Iwaida, M. Ames, Iowa : International Association of Milk, Food, and Environmental Sanitarians. Journal of food protection. Nov 1986. v. 49 (11). p. 909-913. Includes references. (NAL Call No.: DNAL 44.8 J824).

(PESTICIDES - GENERAL)

0703

Deuterium isotope effect on the metabolism and toxicity of 1,2-dibromoethane (Soil, citrus and grain fumigant).

White, R.D.TXAPA. Gandolfi, A.U.; Bowden, G.T.; Sipes, I.G. New York : Academic Press. Toxicology and applied pharmacology. June 30, 1983. v. 69 (2). p. 170-178. Includes references. (NAL Call No.: 391.8 T662).

0704

Development and application of methodology for determining 1,2-dibromo-3-chloropropane (DBCP) (soil fumigant) in ambient air.

Mann, J.B. Freal, J.J.; Enos, H.F.; Danauskas, J.X. New York, Marcel Dekker. Journal of environmental science and health. Part B: Pesticides, food contaminants, and agricultural wastes. 1980. v. B15 (5). p. 519-528. ill. 2 ref. (NAL Call No.: TD172.J61).

0705

Dibromochloropropane residues in peaches following fall orchard fumigation (DBCP).

Carter, G.E. Jr., Riley, M.B. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Mar/Apr 1984. v. 32 (2). p. 186-187. Includes references. (NAL Call No.: 381 J8223).

0706

Disposition and air dispersal of ethylene dibromide from fumigated citrus (from infestation by the Caribbean fruit fly, *Anastrepha suspensa*, Florida).

Miller, W.M. Ismail, M.A.; Craig, J.O. St. Joseph, Mich., The Society. Transactions of the ASAE - American Society of Agricultural Engineers. July/Aug 1981. v. 24 (4). p. 1050-1053, 1057. ill. 21 ref. (NAL Call No.: 290.9 AM32T).

0707

Economic assessment of the Michigan tart cherry industry in relation to the soil fumigant EDB (ethylene dibromide).

Klonsky, K. Bird, G.W. East Lansing, The Department. Extract: Cherry orchard sites that have produced profitable yields frequently do not support adequate tree growth when replanted. In Michigan, many cherry orchard replant problems are caused by root-lesion (*Pratylenchus penetrans*) and dagger (*Xiphinema americanum*) nematodes. When high population densities of these species are present, Michigan growers are advised to fumigate the soil the fall before replanting an old orchard site. The soil fumigant most commonly used by Michigan cherry growers until 1978 was ethylene dibromide (EDB). The objectives of this study are to assess the impact of EDB on Michigan

tart cherry production during the past 10 years, and estimate the potential impact of the loss of EDB for use in Michigan cherry production in the future. An econometrics approach is used to evaluate the influence of various production systems inputs on the supply and demand for tart cherries. Agricultural economics report - Michigan State University, Department of Agricultural Economics. Sept 1981. Sept 1981. (401). 132 p. 22 ref. (NAL Call No.: 281.9 M5842).

0708

Economic effects of banning soil Fumigants /Joseph R. Barse, Walter Ferguson, Robert Seem.

Barse, Joseph R. Ferguson, Walter.; Seem, Robert. Washington, D.C. : United States Dept. of Agriculture, Economic Research Service, 1988 . Cover title.~ "December 1988"--P i. iv, 33 p. : ill. ; 28 cm. Includes bibliographical references (p. 26-27). (NAL Call No.: DNAL A281.9 Ag8A no.602).

0709

EDB: persistence in soil.

SCIEA. Pignatello, J.J. Sawhney, B.L.; Frink, C.R. Washington, D.C. : American Association for the Advancement of Science. Science. May 22, 1987. v. 236 (4804). p. 898. Includes references. (NAL Call No.: DNAL 470 SCI2).

0710

Effect of soil fumigants and fungicides on vesicular-arbuscular fungi.

Menge, J.A. St. Paul, Minn., American Phytopathological Society. Phytopathology. Aug 1982. Literature review. v. 72 (8). p. 1125-1132. 65 ref. (NAL Call No.: 464.8 P56).

0711

Effects of pesticides on ammonification.

Narayana Rao, V.V.S. Boca Raton, Fla. : CRC Press, c1988. Pesticides and nitrogen cycle / editors, Rup Lal, Sukanya Lal. Literature review. v. 2 p. 1-36. Includes references. (NAL Call No.: DNAL QH545.P4P48).

0712

Effects of pesticides on nitrification and denitrification.

Dhanaraj, P.S. Boca Raton, Fla. : CRC Press, c1988. Pesticides and nitrogen cycle / editors, Rup Lal, Sukanya Lal. Literature review. v. 2 p. 43-118. Includes references. (NAL Call No.: DNAL QH545.P4P48).

0713

Effects of 1,3-dichloropropene on the kidney of Fisher 344 rats after pretreatment with diethyl maleate, buthionine sulfoximine, and aminooxyacetic acid.

JTEHD6. Osterloh, J. Xiwen, H. New York, N.Y. : Hemisphere Publishing. Journal of toxicology and environmental health. 1990. v. 29 (3). p. 247-255. Includes references. (NAL Call No.: DNAL RA565.A1J6).

0714

An electron capture gas chromatographic method for determination of residues of

1,2-dibromoethane in fumigated grapefruit.

King, J.R. AR-S0. Von Windeguth, D.L.; Burditt, A.K. Jr. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. Nov/Dec 1980. v. 28 (6). p. 1049-1052. ill. 11 ref. (NAL Call No.: 381 J8223).

0715

Estimating fumigant residues.

AGREA. Corliss, J. Washington, D.C. : The Service. Agricultural research - U.S. Department of Agriculture, Agricultural Research Service. Sept 1990. v. 38 (9). p. 27. (NAL Call No.: DNAL 1.98 AG84).

0716

Ethylene dibromide fumigation of California-grown citrus: effect of dosage, temperature, and load factor on gas concentration, sorption, and residues.

JEENAI. Tebbets, J.S. Hartsell, P.L.; Houck, L.G.; Tebbets, J.C. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1986. v. 79 (4). p. 1044-1049. Includes references. (NAL Call No.: DNAL 421 J822).

0717

Ethylene dibromide fumigation of citrus in reefer compartments on a refrigerated ship (Ceratitis capitata).

Leesch, J.G. Davis, R.; Eons, J.G.; Reeves, R.; Houck, L.G.; Zehner, J.M. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1984. v. 77 (3). p. 773-783. ill. Includes references. (NAL Call No.: 421 J822).

0718

Evaluation of a mixed-phase column packing for the GC (Gas chromatography) determination of fumigant residues in grains.

Daft, J.L. BECTA. New York : Springer-Verlag. Bulletin of environmental contamination and toxicology. Apr 1983. v. 30 (4). p. 492-496. Includes references. (NAL Call No.: RA1270.P35A1).

0719

Evaluation of methodology for determining 1,2-dibromoethane (EDB) in ambient air (of a citrus fumigation facility).

Mann, J.B. Freal, J.J.; Enos, H.F.; Danauskas, J.X. New York, Marcel Dekker. Journal of environmental science and health. Part B: Pesticides, food contaminants, and agricultural wastes. 1980. v. B15 (5). p. 507-518. 4 ref. (NAL Call No.: TD172.J61).

0720

Evaluation of polymer film enclosures as protective barriers for commodities from exposure to structural fumigants.

JAFCAU. Scheffrahn, R.H. Hsu, R.C.; Su, N.Y. Washington, D.C. : American Chemical Society. Internal concentrations (IC's) of sulfuryl fluoride (SF) or methyl bromide (MB) were quantified by gas chromatography in eight types of sealed polymer film bags that were externally fumigated for 20 h at 22 degrees C. Of the five closure methods evaluated (knot, twist-tie, tape, Ziploc, heat-seal) for single polyethylene bags, only slight differences in IC values were observed when bags were exposed to SF at 692 mg.h/L. Increases in the ratio of internal air volume to bag surface area resulted in a pronounced nonlinear reduction of IC for SF in single, heat-sealed polyethylene bags exposed to 676 mg.h/L. Optimum protection for each film type occurred in double-bagged enclosures (vs single), and nylon film bags had consistently lower IC's (0.041-484 ppm) than all other film types for the three SF exposures (96.9, 677, 6872 mg.h/L.) tested. Exposure of double-bag enclosures to MB at 683 mg.h/L also demonstrated that MB permeation was highly variable between film types. In double-enclosure experiments, polyethylene films afforded the poorest protection against permeation (as low as 64.8 and 93.0%), while nylon polymers gave the best protection (up to 99.98 and 99.997%) for MB and SF, respectively, at comparable exposures. Journal of agricultural and food chemistry. Mar 1990. v. 38 (3). p. 904-908. Includes references. (NAL Call No.: DNAL 381 J8223).

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0721

Field application of evaluated methodology for determining 1,2-dibromoethane, EDB, in ambient air (of citrus fumigation stations).
Mann, J.B. Freal, J.J.; Enos, H.F.; Danauskas, J.X. New York, Marcel Dekker. Journal of environmental science and health. Part B: Pesticides, food contaminants, and agricultural wastes. 1980. v. B15 (5). p. 529-543. ill. 3 ref. (NAL Call No.: TD172.J61).

0722

Field determination of fumigant concentrations.
Dunn Loring, VA : National Pest Control Association, 1985. Abstract: This technical release covers devices including leak detectors, analyzers, portable photoionization gas chromatograph and color indicator tapes for field determination of fumigant concentrations. Caption title.~ "Developed by the 1983-84 Fumigation Committee."~ "2/14/85."~ "ESPC 073052." 1 v. (unpaged) : ill. ; 28 cm. (NAL Call No.: DNAL SB955.F5).

0723

Fluoride residues in frozen foods fumigated with sulfuryl fluoride.
BECTA6. Scheffrahn, R.H. Hsu, R.C.; Su, N.Y. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. Dec 1989. v. 43 (6). p. 899-903. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

0724

Fumigant piping system for hydrogen phosphide in (agricultural) commodities (Pest control).
Cleveland, Harvest Publishing Co. Pest control. Feb 1980. v. 48 (2). p. 54. ill. (NAL Call No.: 449.8 EX8).

0725

Fumigants and nematicides under California conditions.
McKenry, M.V. Oakland : University of California, Division of Agriculture and Natural Resources, 1987. Fate of pesticides in the environment : proceedings of a technical seminar / James W. Biggar and James N. Seiber, editors and technical coordinators. p. 47-49. Includes references. (NAL Call No.: DNAL TD196.P38F3).

0726

Fumigation.
Stockdale, Harold J. Buntin, Linda A. & Iowa commercial pesticide applicator manual. Document available from: Iowa State University, Publications Distribution, Printing & Publications Bldg., Ames, Iowa 50011 1980. This publication discusses grain bin fumigation, methods, materials, and the necessary equipment to control pests. This can also apply to other storage structures as well. 35 p. : ill. (NAL Call No.: Document available from source.). (NAL Call No.: CS-27).

0727

Fumigation : category 7C / (prepared by Harold J. Stockdale and Linda A. Buntin). -. Stockdale, Harold J. Buntin, Linda A. & Iowa commercial pesticide applicator manual. Ames, Iowa Cooperative Extension Service, Iowa State University 1980. Pesticide Applicator Training Collection ~Cover title ~At head of title: Iowa commercial pesticide applicator manual ~"September 1980. ~CS-27. 35, (1) p., (1) p. of plates : ill., map, form ; 28 cm. (NAL Call No.: SB955.S72 1980).

0728

Fumigation handbook.
Washington, D.C. : U.S. Dept. of Agriculture, Federal Grain Inspection Service, 1987. Cover title.~ "September, 1987"--P. 1. 35 p. : ill. ; 28 cm. (NAL Call No.: DNAL aSB955.F9).

0729

Fumigation of baled cotton with hydrocyanic acid for the pink bollworm by A.C. Johnson, George G. Becker, and Lon A. Hawkins. -. Johnson, A. C. Washington, D.C. U.S. Dept. of Agriculture 1938. 46 p. : ill. --. Includes bibliographical references. (NAL Call No.: Fiche S-69 no.623).

0730

Fumigation of commodities under tarps presented by National Pest Control Association.
Dunn Loring, Va. : NPCA, c1989. The basics of fumigation of commodities under tarps are covered in this National Pest Control Association audio-visual training program for service technicians. The uses of sulfuryl fluoride, methyl bromide and phosphine, the three fumigants registered for fumigating commodities in these vessels, are briefly described. The eight steps in the fumigation process are discussed in detail. This training package includes a video, practical training tips, program presentation recommendations, a pretest and a post test (with answers), a program script, and a supplemental information list. Cassette label has 1987 copyright date. 1

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videocassette (18 min.) : sd., col. ; 1/2 in. + 1 manual (15 leaves). (NAL Call No.: DNAL Videocassette no.1044).

0731

Fumigation of empty grain drying bins with chloropicrin, phosphine, and liquid fumigant mixtures (*Tribolium castaneum*, *Sitophilus oryzae*).

Quinlan, J.K. McGaughey, W.H. College Park, Md. : Entomological Society of America. Journal of economic entomology. Feb 1983. v. 76 (1). p. 184-187. Includes references. (NAL Call No.: 421 J822).

0732

Fumigation of trailers, containers and railcars National Pest Control Association. Dunn Loring, Va. : NPCA, c1987. The basics of forty foot trailer, specialized container, and railcar (boxcar and hopper car) fumigation are covered in this National Pest Control Association audio-visual training program for service technicians. The uses of sulfuryl fluoride, methyl bromide and phosphine, the three fumigants registered for fumigating commodities in these vessels, are described. The eight steps in the fumigation process are discussed in detail. This training package includes a video, practical training tips, program presentation recommendations, a pretest and a post test (with answers), a program script, and a supplemental information list. VHS. 1 videocassette (17 min.) : sd., col. ; 1/2 in. + 1 teaching guide/script (15 p.). (NAL Call No.: DNAL Videocassette no.1050).

0733

Fumigation pest control. -. (Madison) University of Wisconsin-Extension (1982?). Integrated Pest Management/Pesticide Applicator Training Collection ~Cover title ~At head of title: Pest management principles for the commercial applicator. 1 v. (various pagings) : ill. (some col.) ; 30 cm. Includes bibliographical references. (NAL Call No.: SB955.F82).

0734

Fumigation pest control training for certification / Jim Hamer ... et al. . Hamer, Jim L. Mississippi State? : Cooperative Extension Service, Mississippi State University, 1985? . Abstract: This is a self-study manual designed for commercial pesticide applicator certification in fumigation pest control. It discusses the nature and effect of fumigants, precautions, protective equipment, and detection, symptoms and emergency treatment for acute poisoning by fumigants. The identification, biology and behavior of Stored Grain Insect Pests is also

covered. vii, 51, 7 p. : ill. ; 28 cm. Includes bibliographical references. (NAL Call No.: DNAL SB955.F84).

0735

Fumigation short course : February 11 and 12, 1982 / sponsored by The University of Kentucky, College of Agriculture and The Kentucky Feed and Grain Dealers Association. -. (Kentucky The College? 1982). Cover title ~Pesticide Applicator Training collection. 1 v. (various pagings) : ill. (some col.) ; 28 cm. Includes bibliographies. (NAL Call No.: SB955.F8 1982).

0736

Fumigation with pesticides : safe, effective use of pesticides, a manual for commercial applicators. -. E. Lansing Michigan State University. Cooperative Extension Service (1980?). Cover title ~Pesticide Applicator Training collection. 38 p. ; 28 cm. --. (NAL Call No.: 275.29 M58B no.1032-12).

0737

Fumigation pesticide applicator manual. Stillwater? : Cooperative Extension Service, Division of Agriculture, Oklahoma State University, 1987? . Abstract: This training packet includes publications and other materials on topics such as safety, equipment, specific products, and pest identifications. O. Norman Nesheim, Extension Pesticide Coordinator. ~ Includes contents sheet and various materials. 1 portfolio : ill. ; 32 cm. (NAL Call No.: DNAL SB955.F83).

0738

Fungicides, nematocides and soil fumigants. Grau, C.R. Stevenson, W.R.; Worf, G.L. Madison, Wis. : The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. Mar 1985. (A2336). 4 p. (NAL Call No.: DNAL S544.3.W6W53).

0739

Fungicides, nematocides, and soil fumigants. Boone, D.M. Grau, C.R.; Stevenson, W.R.; Worf, G.L. Madison, Wis., The Programs. Publication - Cooperative Extension Programs, University of Wisconsin Extension. Jan 1981. Jan 1981. (A2336). 4 p. (NAL Call No.: S544.3.W6W53).

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0740

Fungicides, Nematicides and soil fumigants (Chemical and trade names, uses).

Grau, C.R. Stevenson, W.R.; Worf, G.L. Madison, Wis. : The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. Feb 1984. Feb 1984. (2334,rev.). 4 p. (NAL Call No.: S544.3.W6W53).

0741

Fungicides, nematicides, and soil fumigants (Glossary of chemicals).

Boone, D.M. Grau, C.R.; Stevenson, W.R.; Worf, G.L. Madison : The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. 1983. 1983. (A2336). 4 p. (NAL Call No.: S544.3.W6W53).

0742

Fungicides, nematicides, and soil fumigants (Glossary of chemicals for use in Wisconsin).

Boone, D.M. Grau, C.R.; Stevenson, W.R.; Worf, G.L. Madison : The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. Jan 1983. Jan 1983. (2336). 4 p. (NAL Call No.: S544.3.W6W53).

0743

Gas chromatographic determination of CCRL583 perfluorinated alcohol fumigant residues.

JANCA2. Zehner, J.M. Simonaitis, R.A. Arlington, Va. : The Association. Journal of the Association of Official Analytical Chemists. July/Aug 1985. v. 68 (4). p. 749-750. Includes 3 references. (NAL Call No.: DNAL 381 AS7).

0744

Gas chromatographic determination of fumigant residues in stored grains, using isoctane partitioning and dual column packings.

Daft, J.L. JANCA. Arlington : The Association. Journal of the Association of Official Analytical Chemists. Mar 1983. v. 66 (2). p. 228-233. Includes references. (NAL Call No.: 381 AS7).

0745

Gas-film coefficients for the volatilization of ethylene dibromide from water.

ESTHAG. Rathbun, R.E. Tai, D.Y. Washington, D.C. : American Chemical Society. Environmental science & technology. Sept 1986. v. 20 (9). p. 949-952. Includes references. (NAL Call No.: DNAL TD420.A1E5).

0746

Grain fumigation and seed treatment training manual. -.

Helena Montana Dept. of Agriculture 1981. Cover title ~Pesticide Applicator Training collection. i, 35, (1) p. : ill. ; 28 cm. (NAL Call No.: SB950.2.M9G7).

0747

Grain fumigation exam : certification and re-certification. -.

(S.l. North Dakota Cooperative Extension Service? 1980?). Caption title ~Pesticide Applicator Training Collection. 4 leaves ; 28 cm. (NAL Call No.: SB955.G7).

0748

Grain fumigation: pesticide bans limit options.

CACBA. Johnson, L.A. Minneapolis, Minn. : Cargill, Inc. Cargill bulletin. Mar 1986. p. 4-5. (NAL Call No.: DNAL 281.8 C19).

0749

Handling a fumigant waste.

JPCAAC. Morse, H.N. Pittsburgh, Pa. : Air Pollution Control Association. JAPCA. Sept 1988. v. 38 (9). p. 1239. Includes references. (NAL Call No.: DNAL 449.9 AI7).

0750

Health and environmental effects profile for methyl bromide.

Cincinnati, Ohio : Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, 1986. Cover title ~ "June 1986." ~ "PB88242367." ~ "EPA/600/X-86/171." xiv, 79 leaves ; 28 cm. Bibliography: leaves 60-79. (NAL Call No.: DNAL TD177.H42).

0751

Human genotoxicity: pesticide applicators and phosphine.

SCIEA. Garry, V.F. Griffith, J.; Danzi, T.J.; Nelson, R.L.; Whorton, E.B.; Krueger, L.A.; Cervenka, J. Washington, D.C. : American Association for the Advancement of Science. Fumigant applicators who, 6 weeks to 3 months earlier, were exposed to phosphine, a common grain fumigant, or to phosphine and other pesticides had significantly increased stable chromosome rearrangements, primarily translocations in G-banded lymphocytes. Less stable aberrations including chromatid deletions and gaps were significantly increased only during the application season, but not at this later time point. During fumigant

application, measured exposure to phosphine exceeds accepted national standards. Because phosphine is also used as a dopant in the microchip industry and is generated in waste treatment, the possibility of more widespread exposure and long-term health sequelae must be considered. Science. Literature review. Oct 13, 1989. v. (246). p. 251-255. ill. Includes references. (NAL Call No.: DNAL 470 SCI2).

0752

Hydrogen phosphide fumigation with aluminum phosphide.

Washington, D.C. : Armed Forces Pest Management Board, Forest Glen Section, Walter Reed Army Medical Center, 1987. Abstract: This Armed Forces Pest Management Board memorandum on hydrogen phosphide fumigation covers safety precautions, personal protection equipment, storage, handling, waste disposal, spill and leak procedures, and hydrogen phosphide (phosphine) detection equipment. Guidelines for in-transit railcar fumigation and stack and stationary van fumigation are provided. Includes materials and equipment list; suggested formats for preparation, fumigation and clearance checklists; and requirements for minimally acceptable respiratory protection program. Cover title.~ "February 1987.". ii, 19, 12 p. ; 28 cm. (NAL Call No.: DNAL SB955.H93).

0753

The importance of soil fumigation for nematode control.

CAGRA, Radewald, J.D. McKenry, M.V.; Roberts, P.A.; Westerdahl, B.B. Berkeley, Calif. : The Station. California agriculture - California Agricultural Experiment Station. Nov/Dec 1987. v. 41 (11/12). p. 16-17. (NAL Call No.: DNAL 100 C12CAG).

0754

In vitro methylation of DNA by the fumigant methyl bromide.

JPFCD2. Starratt, A.N. Bond, E.J. New York, N.Y. : Marcel Dekker. Journal of environmental science and health : Part B : Pesticides, food contaminants, and agricultural wastes. 1988. v. 23 (5). p. 513-525. Includes references. (NAL Call No.: DNAL TD172.J61).

0755

Increased aeration of citrus fumigated with ethylene dibromide (Caribbean fruit fly, *Anastrepha suspensa*, air pollution).

Miller, W.M.PFSA. Ismail, M.A.; Craig, J.O. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 216-218. Includes references. (NAL Call No.: 81 F66).

0756

Industrial, institutional, structural, and health related pest control : fumigation / organized by William H. Robinson. -.

Robinson, William H. & Pesticide applicator certification training : category 7d manual : fumigation.; Fumigation. Blacksburg Extension Division, Virginia Polytechnic Institute and State University 1979 (1981 printing). Cover title: Pesticide applicator certification training : category 7d manual : fumigation ~"Reprinted August 1981. ~Pesticide Applicator Training collection. iii, 99 leaves : ill. ; 28 cm. Bibliography: leaf 99. (NAL Call No.: SB955.I5).

0757

Industrial, institutional, structural, and health related study questions /compiled and edited by Gene Burgess.

Burgess, Gene. Tennessee : University of Tennessee, Agricultural Extension Service, 1988? . Abstract: This manual is a compilation of multiple choice study questions designed to familiarize Tennessee pesticide applicants with industrial, institutional, structural and health related certification examination questions. Specific topics covered are common insects and arthropod pests, stored grain insects, fumigants, vertebrate pests, weeds, pesticide dilution formulation, and safety procedures. The answers are included. Cover title: Category 7 study questions.~ EC1013. 31, 1 p. ; 28 cm. (NAL Call No.: DNAL SB950.2.T2C37 1988).

0758

Inhalation exposure of grain samplers and grain inspectors to carbon tetrachloride.

ACSMC. Deer, H.M. McJilton, C.E.; Karein, P.K.; Sumner, W. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. 1985. (273). p. 221-241. Includes 57 references. (NAL Call No.: DNAL QD1.A45).

0759

Inhalation exposure of museum personnel to ethylene dichloride-carbon tetrachloride fumigant.

ACSMC. Spittler, T.D. Bourke, J.B.; Baker, P.B.; Helfman, G.W. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. 1985. (273). p. 243-251. Includes 3 references. (NAL Call No.: DNAL QD1.A45).

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0760

Interaction of nemagon (DBCP) with constituents of water-soil systems.

RUCDD. Vilker, V.L. Davis, Calif. : The Center. Report - California Water Resources Center, University of California. Dec 1987. (67). p. 49. (NAL Call No.: DNAL 292.9 C1282).

0761

An Introduction to fumigation written and compiled by Lawrence J. Pinto ; produced by National Pest Control Association.

Pinto, Lawrence J. Dunn Loring, Va. : NPCA, 1986. Covers the four basic steps in the fumigation process, factors affecting fumigation, physical properties of pressurized gas, liquid and solid fumigants and the six categories of fumigation. Specifically discusses the properties, toxicity, and uses of phosphine, methyl bromide, and sulfuryl fluoride. Also covers safety measures and poisoning symptoms and treatments. Parts A and B are on one videocassette. 4 videocassettes (75 min.) : sd., col. ; 1/2 in. + 4 teaching guides/scripts. (NAL Call No.: DNAL Videocassette no.1048).

0762

The law and regulations on licensing pest control operators a handbook for commercial pest control operators /issued January 15, 1984 by the State Plant Board ... Commercial Pest Control Section.

Arkansas.~State Plant Board. Little Rock, Ark. : The Board, 1984. Abstract: The Arkansas Pest Control Law and the regulations of the State Plant Board for licensing pesticide control applicators are the contents of this handbook. The 1985 regulation changes are attached separately. Caption title. 27 p. : ill. ; 22 cm. (NAL Call No.: DNAL KFA3882.I5A3 1984).

0763

Louisiana Pest Control Association study guide for pest control technicians /compiled and written by the Educational Resource Committee of the Louisiana Pest Control Association.

Baton Rouge, La. : Louisiana Pest Control Association, 1988. Abstract: This study guide for Pest Control Technician applicants is a basic compilation of identification techniques and control strategies for common structural pests in Louisiana. The principles of fumigation, pesticide labeling, regulations, and the use calibration and maintenance of pesticide equipment are covered. Information on the classification of pesticides by chemical structure, use, mode of action, and regulation is included. Cover title. 67 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB951.L68).

0764

Management of pesticide poisonings produced by Biomedical Communications, University of Nebraska Medical Center in cooperation with the Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln and the Extension Service, U.S. Department of Agriculture.

Omaha, NE : Biomedical Communications, 198-? . Abstract: Covers how pesticides enter the body, symptoms of poisoning, steps for treating poisoning victim upon arrival at the hospital, and use of label information and Poison Control Centers. Gives information on treatment of poisoning by organophosphates or carbamates, organochlorines, dipyrldyls (paraquat and diquat), fumigants, and strychnine. For nurses. Sound accompaniment compatible with manual and automatic operation. 111 slides : col. + 1 audible pulse sound cassette (14 min.) + 1 inaudible pulse sound cassette (14 min.) + 1 script (16 p.). (NAL Call No.: DNAL Slide no.345).

0765

Management of pesticide poisonings a guide for physicians /produced by Biomedical Communications, University of Nebraska Medical Center in cooperation with the Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln and the Extension Service, U.S. Dept. of Agriculture.

Omaha, NE : Biomedical Communications, 198-? Abstract: Covers routes of exposure to pesticides, symptoms of systemic poisoning, tips for diagnosis including atropine refractory test, and treatment of poisoning by organophosphates or carbamates, organochlorines, dipyrldyls (paraquat and diquat), fumigants, and strychnine. Considerable discussion of other illnesses which may cause symptoms similar to pesticide poisoning symptoms. For health providers. Sound accompaniment compatible with manual and automatic operation. 119 slides : col. + 1 audible pulse sound cassette (17 min.) + 1 inaudible sound cassette (17 min.) + 1 script (19 p.). (NAL Call No.: DNAL Slide no.346).

0766

Management of pesticide poisonings guide for emergency personnel /produced by Biomedical Communications, University of Nebraska Medical Center in cooperation with the Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln and the Extension Service, U.S. Department of Agriculture.

Omaha, NE : Biomedical Communications, 198-? . Abstract: Covers how pesticides enter the body, poisoning symptoms and first aid for organophosphates and carbamates, organochlorines, dipyrldyls, fumigants, and strychnine. Gives examples of appropriate response in several different types of poisoning incidents. Also discusses how

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emergency workers should protect themselves from being poisoned and decontaminate after contact with pesticide residues. For emergency personnel. Sound accompaniment compatible with manual and automatic operation. 104 slides : col. + 1 audible pulse sound cassette (13 min.) + 1 inaudible pulse sound cassette (13 min.) + 1 script (16 p.). (NAL Call No.: DNAL Slide no.344).

0767

Metabolic activation of 1,2-dibromoethane by glutathione transferase and by microsomal mixed function oxidase: further evidence for formation of two reactive metabolites (Soil fumigants).

Shih, T.W. Hill, D.L. Westbury, N.Y., PJD Publications. Research communications in chemical pathology and pharmacology. Sept 1981. v. 33 (3). p. 449-461. Bibliography p. 459-461. (NAL Call No.: RM1.R4).

0768

Methyl bromide.

Alexeeff, G.V. RREVA. Kilgore, W.W. New York : Springer. Residue reviews. 1983. Literature review. v. 88. p. 101-153. Includes references. (NAL Call No.: 389.9 R314).

0769

Methyl bromide cautions (Soil fumigation products).

Maisano, J.J. Jr. Storrs, Conn. : The Service. Connecticut greenhouse newsletter - University of Connecticut, Cooperative Extension Service. Apr 1984. Apr 1984. (120). p. 6. (NAL Call No.: SB415.C625).

0770

Methyl bromide fumigation treatments for pistachio nuts to decrease residues and control navel orangeworm, *Amyelois transitella* (Lepidoptera: Pyralidae).

JEENAI. Hartsell, P.L. Nelson, H.D.; Tebbets, J.C.; Vail, P.V. College Park, Md. : Entomological Society of America. Journal of economic entomology. Oct 1986. v. 79 (5). p. 1299-1302. Includes references. (NAL Call No.: DNAL 421 J822).

0771

Methyl bromide residues in fumigated mangos.

JAFCAU. Stein, E.R. Wolfenbarger, D.A. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Nov/Dec 1989. v. 37 (6). p. 1507-1509. Includes references. (NAL Call No.: DNAL 381 J8223).

0772

Methylbromide: carcinogenic effects in the rat forestomach.

Danse, L.H.J.C. Van Velsen, F.L.; Van der Heijden, C.A. New York, N.Y. : Academic Press. Toxicology and applied pharmacology. Feb 1984. v. 72 (2). p. 262-271. ill. Includes references. (NAL Call No.: 391.8 T662).

0773

Microbial degradation of 1,2-dibromoethane in shallow aquifer materials.

JEVQAA. Pignatello, J.J. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1987. v. 16 (4). p. 307-312. Includes references. (NAL Call No.: DNAL QH540.J6).

0774

Miscellaneous study materials for commercial applicators / compiled by Ohio Department of Agriculture Laboratories, Division of Plant Industry .

1959- . Abstract: These commercial applicator study materials include general core information on Ohio pesticide regulations, Poison Control Centers, pesticide safety and toxicity, and groundwater protection, and information pertaining to the control of plant agricultural, forest, ornamental, turf, vertebrate (bird), structural (termite), public health (mosquito) and stored grain pests, fumigation, seed treatment, and demonstration and research. Cover title.~ Title supplied by cataloger. v. : ill. ; 28 cm. (NAL Call No.: DNAL SB952.863.03M5).

0775

Modification of the AOAC (Association of Official Analytical Chemists) method for determination of fumigants in wheat.

Clower, M. Jr. Arlington, Va., The Association. Journal of the Association of Official Analytical Chemists. Association of Official Analytical Chemists. May 1980. v. 63 (3). p. 539-545. ill. 10 ref. (NAL Call No.: 381 AS7).

0776

Nevada pesticide applicator training certification workbook /H.G. Smith ... et al. .

Smith, H. G. Reno, Nev.? : Nevada Cooperative Extension, University of Nevada, 1987 . Abstract: Designed to assist individuals preparing for pesticide certification examinations, this workbook developed in Nevada includes general information on federal and state pesticide laws and regulations; pesticide types, labels, formulations, toxicity, and safety, protective clothing and equipment; what to do in pesticide poisoning cases; and

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equipment selection and calibration. Plant diseases, insects, weeds, vertebrate pests, groundwater contamination, chemigation, and safe and effective applicator practices are discussed. Contains color coded information relevant to the following categories: agricultural plant and animal, forest, and ornamental and turf pest control, seed treatment, aquatic, right-of-way, industrial, public health, fumigation, mosquito, and predator pest control and wood preservatives. General information material must be supplemented by reading the Applying Pesticides Correctly handbook. Cover title.~ "December 1987.". 136 p. : ill. ; 28 cm. (NAL Call No.: DNAL S87.S7 no.87-7 1987).

0777

A new look at soil insecticides and fumigants for the control of the pecan weevil (*Curculio caryae*, Smite, Lorshan, Sevin, *Carya illinoensis*).

Neel, W.W. Graves, C.H.; Coats, R.E. Starkville, Miss., The Association. Proceedings ... annual convention - Southeastern Pecan Growers Association. 1981. 1981. 74th). p. 159-168. ill. 8 ref. (NAL Call No.: 94.69 G29).

0778

Occupational exposure to 1,3-dichloropropene (Telone II) in Hawaiian pineapple culture.

AEHLA. Albrecht, W.N. Washington, D.C. : Heldref Publications. Archives of environmental health. Sept/Oct 1987. v. 42 (5). p. 286-291. Includes references. (NAL Call No.: DNAL RC963.A1A7).

0779

Outgassing of ethylene dibromide from fumigated oranges (Worker exposure to pesticides).

Rappaport, S.M. Cameron, W.; McAllister, J. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1984. v. 32 (5). p. 1112-1116. ill. Includes 10 references. (NAL Call No.: 381 J8223).

0780

Persistence of terbutryn and atrazine in soil as affected by soil disinfestation and fungicides.

WEESA6. Avidov, E. Aharonson, N.; Katan, J.; Rubin, B.; Yarden, O. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 457-461. Includes 16 references. (NAL Call No.: DNAL 79.8 W41).

0781

Persistence of 1,2-dibromoethane in soils: entrapment in intraparticle micropores.

ESTHAG. Steinberg, S.M. Pignatello, J.J.; Sawhney, B.L. Washington, D.C. : American Chemical Society. Environmental science & technology. Dec 1987. v. 21 (12). p. 1201-1208. Includes references. (NAL Call No.: DNAL TD420.A1E5).

0782

Pest management principles for the commercial applicator fumigation pest control /John Wedberg ... et al. .

Wedberg, J. L. Madison, WI : University of Wisconsin-Extension, 1988 . Abstract: Training manual for commercial pesticide applicators in the fumigation pest-control category. Major topics: fumigants; methods of fumigation; principles of insect control; calibration; stored grain fumigation; toxicity of pesticides; protecting human health and the environment; disposal; and label information. Includes study guide of multiple choice questions and answers. March 1988. 1 v. (various pagings) : ill. ; 30 cm. Bibliography: p. 116 (Appendix A). (NAL Call No.: DNAL SB955.F82 1988).

0783

Pest management principles for the Wisconsin farmer fumigant pesticides /Ron Doersch ... et al. .

Doersch, R. E. Madison, Wis.? : University of Wisconsin-Extension?, 1991 . Training manual for private pesticide applicators using fumigant pesticides; it supplements the core manual pest management principles for the Wisconsin farmer. Major topics: pest management principles for fumigating soil, raw agricultural commodities, and agricultural structures; toxicity of pesticides; protecting human health and the environment; disposal; application methods, and label information. Cover title.~ "January 1991."~ Supplements the training manual, Pest management principles for the Wisconsin farmer, 2nd ed. iii, 46 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.W6P482).

0784

Pesticide application and safety training study guide agricultural-livestock pests / compiled and edited by Metro-Pest Management Consultants, Inc. .

Denver, Colo. : Colorado Dept. of Agriculture, Division of Plant Industry, 1980 . Abstract: This Colorado study guide/manual contains the educational information needed by the commercial pesticide applicator to pass the written state certification examination in outdoor vertebrate pest control. The study guide focuses on vertebrates but excludes rat and mice. Control strategies developed for each pest include

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habitat manipulation, behavioral manipulation, and population reduction. The common pests discussed include bats, birds, moles, gophers, skunks, rabbits, squirrels, porcupines, prairie dogs, coyote, racoons, deer and snakes. Indexed toxicants (avicides and rodenticides) and fumigants--their use, history, characteristics, pharmacology, toxicity, and first aid treatment--are discussed. Colorado State Extension Service Offices' addresses and the Rocky Mountain Poison Control Center toll free telephone number are listed. Cover title.~
Caption title: Study guide for livestock pests. 37, 3 p. : ill. ; 28 cm. (NAL Call No.: DNAL SF810.A3P47).

0785

Pesticide applicator training update /Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

Gainesville : The Service, 1987. Abstract: This booklet for certified pesticide applicators contains important updated information on applying pesticides correctly. Topics covered are: Florida pesticide law and rules, disposal of pesticide waste containers, handling pesticide spills, ground water advisory statement on pesticide labels, endangered species pesticide label restrictions, and laundering the pesticide applicators's clothing. Includes 4 detachable safety posters: Pesticide Spill Clean-up Instructions, Triple Rinse, Rubber Glove Zone and Pesticide Applicator's Phone List. Cover title.~ The plates are designed to be torn out and used as posters.~ "SP 34.". 11 p., 8 p. of plates : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.F6P4).

0786

Pesticide applicator training category 7 .

West Lafayette, Ind. : Purdue University, 1988- . Abstract: Five manuals cover the six divisions of Pesticide Applicator Training Category 7. Four manuals prepare commercial pesticide applicators for certification. One manual (7bRT) prepares wood destroying organism technicians for registration. This broad category encompasses the identification and control of industrial, institutional, and health related pests, wood destroying pests, stored food, and common household pests. Pesticide selection, labels, safety, protective equipment, application, calibration, fumigation, toxicity and environmental protection are discussed. Cover title. v. : ill. (some col.), maps ; 30 cm. (NAL Call No.: DNAL SB951.P4629).

0787

Pesticide applicator training private applicator, fumigation .

West Lafayette, Ind.? : Purdue University, 198-? . Abstract: This training manual for private applicators of fumigants contains a certification training module, a list of insect and vertebrate pests, and pictorial keys for insect pest identification. It outlines federal and state regulations affecting private applicators, Indiana Emergency Treatment Centers, and toxicity and hazard of grain fumigants. The DEGESCH Phostoxin applicator's manual is provided. Cover title. 1 v. (various pagings) : ill. (some col.) ; 30 cm. (NAL Call No.: DNAL SB951.P4635).

0788

Pesticide applicator training private applicator training materials .

West Lafayette, Ind.? : Purdue University, 198-? . Abstract: Private applicator training is the focus of this Purdue University PAT manual. This trainers' version covers federal and state law and restrictions on wood preservatives pertaining to private pesticide applicators. This looseleaf manual contains a variety of materials on toxicity, controlling spray drift, groundwater contamination, storage and disposal of pesticides, labels, calibration, proper application techniques and specific pest management techniques. Cover title.~ "Private applicator: trainer version."--Typewritten label on t.p. 1 v. (various pagings) : ill. (some col.) ; 30 cm. (NAL Call No.: DNAL SB951.P4637).

0789

Pesticide applicator training regulatory pest control .

West Lafayette, Ind. : Purdue University, 1988? . Abstract: The training manual on regulatory pest control examines regulated pests and quarantines and the fumigants, herbicides, and insecticides used in their control. Major topics include controlling insect pests and diseases on ornamentals, weeds, nematodes, common household pests, blackbirds, pigeons and mice and rats. Detailed information on fumigation (i.e. space and structural), gas masks, protective clothing, safety practices, toxicology, sprayer equipment and calibration is presented. Cover title.~ Category 9. 1 v. (various pagings) : ill. (some col.) ; 30 cm. (NAL Call No.: DNAL SB951.P4631).

0790

Pesticide fact sheet number 98methyl bromide.

Washington, DC : Environmental Protection Agency, Office of Pesticide Programs ; Springfield, Va. : NTIS, 1986. "PB87-116513."~ "22 Aug 86."~ Cover title. 7 p. ; 28 cm. (NAL Call No.: DNAL SB951.P495).

(PESTICIDES - GENERAL)

0791

Pesticide profiles. 3. Fumigants, repellents & rodenticides.

Harding, W.C. College Park, Md., The Service. Bulletin - Maryland University, Cooperative Extension Service. 1981/1982. 1981/1982. (288). 25 p. (NAL Call No.: 275.29 M36B).

0792

Phosphine (fumigant) sorption and desorption by stored wheat and corn.

Dumas, T. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. Mar/Apr 1980. v. 28 (2). p. 337-339. ill. 9 ref. (NAL Call No.: 381 J8223).

0793

Photohydrolysis of ethylene dibromide.

JAFCAU. Castro, C.E. Beisesr, N.O. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. May/June 1985. v. 33 (3). p. 536-538. ill. Includes references. (NAL Call No.: DNAL 381 J8223).

0794

Photohydrolysis of methyl bromide and chloropicrin (Transformation of soil fumigants).

Castro, C.E. Belser, N.O. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1981. v. 29 (5). p. 1005-1008. ill. 14 ref. (NAL Call No.: 381 J8223).

0795

Phytotoxic responses from citrus fruit to fumigation with ethylene dibromide.

PHYTAU. Houck, L.G. Jenner, J.F.; Tebbets, S.; Hartsell, P.L. St. Paul, Minn. : American Phytopathological Society. Phytopathology. May 1985. v. 75 (5). p. 616-622. Includes 33 references. (NAL Call No.: DNAL 464.8 P56).

0796

Phytotoxic responses of cherries, nectarines, peaches, pears, and plums fumigated with methyl bromide for control of Mediterranean fruit fly (*Ceratitis capitata*, quarantine).

Harvey, J.M. JOSHB. Harris, C.M. Alexandria : The Society. Journal of the American Society for Horticultural Science. Nov 1982. v. 107 (6). p. 993-996. 5 ref. (NAL Call No.: 81 S012).

0797

Phytotoxicity of methyl bromide as a fumigant for Florida citrus fruit.

Hatton, T.T. AR-SO. Cubbedge, R.H. s.l., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. June 1, 1980. v. 92. p. 167-169. 7 ref. (NAL Call No.: 81 F66).

0798

Poisons and toxins.

Peckham, M.C. Ames, Iowa : Iowa State University Press, 1984. Diseases of poultry / edited by M.S. Hofstad ... et al. . p. 783-818. ill. Includes references. (NAL Call No.: DNAL SF995.B5 1984).

0799

A portable gas chromatograph for macro- and microdetermination of fumigants in the field.

Bond, E.J. Dumas, T. Washington, American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1982. v. 30 (5). p. 986-988. ill. 1 ref. (NAL Call No.: 381 J8223).

0800

Precise dosage delivery method for sulfuryl fluoride in small-chamber fumigations.

JEENAI. Scheffrahn, R.H. Su, N.Y.; Osbrink, W.L.A. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1987. v. 80 (3). p. 705-707. maps. Includes references. (NAL Call No.: DNAL 421 J822).

0801

Private pesticide applicator's training manual.

Denver, Colo. : U.S. Environmental Protection Agency, Region VIII, 1989. Abstract: This EPA Region VIII home study course prepares pesticide applicators for certification or recertification as private pesticide applicators. A pesticide applicator certification application form and examination are included with the manual. The course covers: laws and regulations; labeling; pest identification; integrated pest management techniques; pesticide classifications, formulations and hazards; application equipment, including chemigation systems, fumigation equipment, sprayers and granular applicators; equipment calibration methods; protective equipment; and first aid for poisoning. Contains a glossary. Cover title.~ Shipping list no.: 89-215-P.~ "February 1989." iv, 132 p. : ill. ; 28 cm. + 1 questionnaire (22 p. : forms ; 28 cm.). (NAL Call No.: DNAL SB952.86.P73).

(PESTICIDES - GENERAL)

0802

Private pesticide applicator's training manual /writer and editor, Louise Jones.

Jones, Louise. St. Paul, Minn. : Minnesota Extension Service, University of Minnesota, 1988? . Abstract: This manual is a training guide for private pesticide applicators (farmers and producers who apply or supervise pesticide application) who wish to become certified in the state of Minnesota. The manual focuses on integrated pest management; pesticide formulations (identification and mixing); application (chemigation, fumigation, spraying) methods; and equipment (selection, calibration and cleaning). It emphasizes the safe use of pesticides, proper application procedures as well as environmental and human health concerns. A pesticide toxicity chart, a restricted use list and a cross-indexed 'effects of pesticides on the human body' chart alert the applicator to the dangers of specific chemicals and chemical mixtures. "9/88"--Cover. 1 v. (various pagings) : ill. ; 28 cm. (NAL Call No.: DNAL SB950.73.U52M6).

0803

Properties of soil fumigants.

Shurtleff, M. Overland Park, Kan., Intertec. Grounds maintenance. Aug 1980. v. 15 (8). p. 36-37. (NAL Call No.: SB476.G7).

0804

Qualitative screening of creosote in rumen contents and fumigants in grains (Cattle grazed in a pasture adjacent to a plant that treated railroad ties).

Reynolds, J.D.PAMDD. Stedelin, J.R. Madison : The Association. Proceedings of ... annual meeting - American Association of Veterinary Laboratory Diagnosticians. 1982. 1982. (25th). p. 57-66. Includes references. (NAL Call No.: SF771.A53A).

0805

The quality of early-season table grapes fumigated with methyl bromide and sulfur dioxide (Phytotoxicity, Vitis vinifera, decay, residues).

Phillips, D.J. Austin, R.K.; Fouse, D.C.; Margosan, D.A. Alexandria : American Society for Horticultural Science. HortScience. Feb 1984. v. 19 (1). p. 92-93. Includes references. (NAL Call No.: SB1.H6).

0806

Recertification manual for private pesticide applicators : grain fumigation / by Michigan Department of Agriculture, Plant Industry Division. -.

(S.l.) The Dept. (1982?). Cover title ~Pesticide Applicator Training collection. 4

leaves ; 28 cm. (NAL Call No.: SB950.2.M5R433).

0807

Recertification manual for private pesticide applicators : soil fumigation / by Michigan Department of Agriculture, Plant Industry Division. -.

(S.l.) The Dept. (1982?). Cover title ~Pesticide Applicator Training collection. 4 leaves ; 28 cm. (NAL Call No.: SB950.2.M5R433).

0808

Report on carbamate pesticides, fumigants, and miscellaneous.

Storherr, R.W. Arlington, Va., The Association. Journal of the Association of Official Analytical Chemists. Mar 1981. v. 64 (2). p. 393-394. (NAL Call No.: 381 AS7).

0809

Report on carbamates, fumigants, and miscellaneous.

Storherr, R.W. Arlington, Va., The Association. Journal of the Association of Official Analytical Chemists. Association of Official Analytical Chemists. Mar 1980. v. 63 (2). p. 272. ill. (NAL Call No.: 381 AS7).

0810

Residues of methyl bromide in fumigated grapefruit determined by a rapid, headspace assay.

King, J.R. Benschoter, C.A.; Burditt, A.K. Jr. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1981. v. 29 (5). p. 1003-1005. ill. 11 ref. (NAL Call No.: 381 J8223).

0811

Responses of cherries, nectarines, peaches, pears and plums to fumigation with methyl bromide for control of Mediterranean fruit fly (Ceratitis capitata, USA, quarantine, ripening, phytotoxicity).

Harvey, J.M.PFSA. Harris, C.M. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 229-231. Includes references. (NAL Call No.: 81 F66).

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0812

A review of pesticide effects on microorganisms and microbial processes related to soil fertility.

JPRAEN. Moorman, T.B. Madison, Wis. : American Society of Agronomy. Journal of production agriculture. Literature review. Jan/Mar 1989. v. 2 (1). p. 14-23. Includes references. (NAL Call No.: DNAL S539.5.J68).

0813

Rodenticides developed by the National Pest Control Association ; written and developed by Edward Marshall.

Marshall, Edward. Dunn Loring, Va. : NPCA, c1990. This National Pest Control Association Rodent Control Training Program (one of six videos) discusses the three basic types of rodenticides: acute, anticoagulants and others (e.g. fumigants and other products). Active ingredients used to formulate rodenticides, commercially prepared rodenticide baits, acute, chronic and multiple feeding rodenticides, and resistance are covered. The accompanying manual includes practical training tips, program presentation recommendations, a pretest and a post test (with answers), suggested reference materials, and commensal rodent pictorial identification key. "A video training program"--T.p. of manual. 1 videorecording (12 min.) : sd., col. ; 1/2 in. + 1 training manual (17 leaves). (NAL Call No.: DNAL Videocassette no.1121).

0814

Safe practices in the use and handling of Fumitoxin fumigants. -.

Alhambra, Calif. Pestcon Systems 1982. Cover title ~At head of title: Training booklet ~Pesticide Applicator Training collection. 8 p. : ill. ; 28 cm. (NAL Call No.: SB952.5.S3).

0815

Safe practices in the use and handling of Fumitoxin fumigants /Pestcon Systems, Inc.

Des Moines, IA : Pestcon Systems, Inc., 1988? . Abstract: This ready reference manual produced by PESTCON SYSTEMS INC. compiles FUMITOXIN fumigant labels and its Material Safety Data Sheet in individual clear plastic covers. It emphasizes safe handling and application practices in the use of this restricted pesticide for stored, processed, manufactured product pest control. Materials are various labels for Fumitoxin. 1 v. (unpaged) : ill. ; 28 cm. (NAL Call No.: DNAL SB952.5.S32).

0816

Safety precautions for fumigating with methyl bromide. -.

Midland, Mich. Dow Chemical U.S.A. 1982, c1980. Cover title ~Pesticide Applicator Training collection. 16 p. : ill. ; 28 cm. (NAL Call No.: SB952.5.S33).

0817

Safety rules for fumigators /by Vernon Walter.

Walter, Vernon. Vienna, Va. : NPCA, 1986 . Abstract: A checklist of 37 safety tips for fumigators with attached list of fumigants (methyl bromide, vikane, phosphine, chloropicrin, and calcium cyanide) indicating chemical formulations, toxicity, uses, properties, dosage, application equipment, precautions, storage, handling practices, detection, and poisoning/first aid information. Cover title.~ "May 1986.". 8 p. ; 28 cm. (NAL Call No.: DNAL SB952.85.W3).

0818

Safety self-contained breathing apparatus and canister-type gas masks /developed by the National Pest Control Association.

Dunn Loring, Va. : The Association, c1989. Basic components of, how to fit and operate, and when to use self-contained breathing apparatus (SCBA) and canister-type gas masks, respiratory protective devices used by fumigators, are described and demonstrated in this National Pest Control Association video training program for service technicians. It emphasizes the need to always follow manufacturer's directions and perform preuse safety checks. The video is accompanied by an owner/manager/trainer manual which provides practical training tips; presentation guidelines; 20 fill-in-the-blank, multiple choice, and true or false pretest and post test questions, a work sheet, and an answer sheet; and the video script. VHS.~ "A video training program"--Manual t.p.~ Manual has 1990 copyright date. 1 videocassette (20 min.) : sd., col. ; 1/2 in. + 1 manual. (NAL Call No.: DNAL Videocassette no.999).

0819

Signs and symptoms of pesticide poisoning produced by University of Nebraska Cooperative Extension Service.

Lincoln, Neb.? : The Service, c1991. This videotape identifies the signs and symptoms of pesticide poisoning by organophosphates and carbamates, fumigants, organochlorines, bipyridyls and wood preservatives. Actions to take to prevent serious consequences of over-exposure are outlined. It emphasizes the importance of telling someone what chemicals you will be using and when you will apply them, always following pesticide label directions and always wearing protective equipment. VHS.~ Title on cassette label: Signs & symptoms of

pesticide poisoning.~ A joint production of the Cooperative Extension Services of Iowa State University, Kansas State University, University of Nebraska, University of Missouri through a grant from the U.S. Environmental Protection Agency. 1 videocassette (12 min., 27 sec.) : sd., col. ; 1/2 in. (NAL Call No.: DNAL Videocassette no.987).

0820

Soil fumigation / author, R.M. Riedel .
Riedel, R. M. Columbus, Ohio? : Ohio Cooperative Extension Service, Ohio State University, 1987 . Abstract: This publication describes soil fumigation goals, factors influencing successful soil fumigation, application methods, equipment, calibration procedures, and properties of six commonly used soil fumigants. Includes addresses and telephone numbers of Poison Information Centers in Ohio and surrounding states. Cover title.~ "Agdex 500/606."~ "L-249." 1 folded sheet (6 p.) : ill. ; 28 cm. (NAL Call No.: DNAL SB973.3.R5 1987).

0821

Soil fumigation by chemigation with metham.
Adams, P.B. St. Paul, Minn. : APS Press, c1986. Methods for evaluating pesticides for control of plant pathogens / edited by Kenneth D. Hickey ; prepared jointly by the American Phytopathological Society and the Society of Nematologists. p. 270-272. ill. Includes references. (NAL Call No.: DNAL SB960.M47 i986).

0822

Soil fumigation: principles and application technology.
JONEB. Lembright, H.W. Lake Alfred, Fla. : Society of Nematologists. Journal of nematology. Supplement to the Journal of Nematology (Annals of Applied Nematology).~ Literature review. Oct i990. v. 22 (4S).p. 632-644. Includes references. (NAL Call No.: DNAL QL39i.N4J62).

0823

Some fumigant properties of hexamethyl distannane against stored-product insects (Tribolium confusum, Lasioderma serricorne, Attagenus megatoma, Sitophilus oryzae).
Leesch, J.G.GENSA. Sukkestad, D.R. Athens : The Society. Journal of the Georgia Entomological Society. July 1983. v. i8 (3). p. 385-394. Includes references. (NAL Call No.: QL461.G4).

0824

Special report: Integrated pest management (for the food industry, reducing reliance on the use of chemical fumigants and pesticides).
Stauffer, C.E. St. Paul, Minn. : American Association of Cereal Chemists. Cereal foods world. Apr i984. v. 29 (4). p. 251-253. ill. (NAL Call No.: 59.8 C333).

0825

Stored grain insect control / author, Harold R. Willson .
Willson, Harold R. Columbus, Ohio? : Ohio Cooperative Extension Service, Ohio State University, 1988? . Abstract: Basic steps of a grain pest management program including sanitation and chemical treatments of the empty storage facility, application of grain protectants, grain monitoring and management, and corrective pest control procedures, particularly solid formulations of aluminum phosphide fumigant and the gas fumigant methyl bromide are discussed. Descriptions and illustrations of stored grain pests, equations for grain storage calculations and a poison information centers list are provided. Cover title.~ "1/88-2M J.51355"--P. 2 .~ "Agdex 400/623." 15 p. : ill. ; 28 cm. (NAL Call No.: DNAL 275.29 OH32 no.153).

0826

Stored grain pest management /edited by James H. Cink and Phillip K. Harein.
Cink, James.; Harein, Phillip. St Paul, Minn. : Dept. of Entomology, Minnesota Extension Service, University of Minnesota, 1989 . Developed as a guide for training stored grain pest managers in the areas of fumigation, this manual is designed to provide information to assists stored grain managers in solving pest problems and in preparing the state certification in commercial or non-commercial fumigation. Fumigation principles and safety, types and methods of fumigation, application procedures and specific fumigants are discussed. Additional major topics include: rodents and their control; pest bird management; other pest animals; weeds; pesticides; formulations; laws and regulations; labels; toxicity; human and environmental protection; calibration; grain protectants and application equipment. Includes sample checklists for: prefumigation building inspection, fumigation and fumigant clearance; a glossary; and study questions and answers. Title on pamphlet: Stored grain insects and molds. 1 v. (various paging) : ill. ; 28 cm. + picture sheets. (NAL Call No.: DNAL SBi90.S762).

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0827

Stored products pest control category 7B / F. Robert Henderson ... et al. .
Henderson, F. Robert. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1986 . Abstract: Designed for commercial pesticide applicators, this manual provides information on the life cycles of stored product insects, the biology of vertebrate pests (rats, mice and birds) and their control. It explains how to properly and safely apply pesticides in food plants and fumigants. This study guide contains practice multiple choice questions. Cover title.~ At head of title: Commercial pesticide applicator certification and recertification study manual.~ "S-i6, July 1986"--P. 4 of cover. 42 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB937.S7 1986).

0828

Structural fumigation in pest management.
MUCBA. Moore, R.L. Mesecher, R.L.; Bird, G.; Ruppel, R.F.; Brown, A. East Lansing, Mich. : The Service. Extension bulletin E - Cooperative Extension Service, Michigan State University. 1990? . (2053). 4i p. (NAL Call No.: DNAL 275.29 M58B).

0829

Structural, institutional and health related, subcategory: fumigation : commercial pesticide applicators manual. -.
Russell, Harold G.; Evenson, M. R. & Commercial pesticide applicators manual. (Stillwater) Oklahoma State University, Cooperative Extension Service (1980?). Cover title ~Pesticide Applicators Training collection ~"This manual was adopted for Oklahoma from a certificate manual that was prepared by Harold G. Russell, Jr. ... with additions by M. R. Evenson ..." -- Preface. 32 p. : ill. ; 28 cm. (NAL Call No.: SB955.S7).

0830

Structural pest control : category 7E / (F. Robert Henderson, Lynne C. Thompson, Vernon McKinzie). -.
Henderson, F. Robert. Thompson, Lynne C.; McKinzie, Vernon. & Commercial pesticide applicator certification and recertification study manual. Manhattan Cooperative Extension Service, Kansas State University 1980. Pesticide Applicator Training Collection ~Cover title ~At head of title: Commercial pesticide applicator certification and recertification study manual ~S-i5 ~"July 1980.". 58 p. : ill. ; 28 cm. (NAL Call No.: SB955.H4).

0831

Structural pest management /edited by James H. Cink and Phillip K. Harein.
Cink, James H.; Harein, Phillip K. St. Paul, Minn. : Dept. of Entomology, Minnesota Extension Service, University of Minnesota, 1989 . Developed as a guide for training Structural Pest Control Operators (PCOs), this manual is designed to assist PCOs in solving pest problems and preparing for state certification. Insects and related arthropods and their control; rodents and their control; pest bird management; other pest animals; and weeds are covered. Pesticides, formulations, laws and regulations including the Minnesota Pesticide Control Law of 1976, labels, toxicity, human and environmental protection, application equipment, calibration, fumigants, and fumigation are discussed. Contains a glossary, multiple choice study questions and answers, and pictorial keys. "March 1989.". i v. (various pagings) : ill. ; 28 cm. + 4 sheets. Includes bibliographical references. (NAL Call No.: DNAL SB950.2.M6S77).

0832

Studies of methyl bromide in greenhouse and vault fumigation by Henry H. Richardson ... (et al.). -.
Richardson, Henry H. Washington, D.C. U.S. Dept. of Agriculture 1943. 20 p. : ill. --. Bibliography: p. 18-20. (NAL Call No.: Fiche S-69 no.853).

0833

Studies with gaseous mutagens in Drosophila melanogaster.
EVSRB. Krammers, P.G.N. Bissumbhar, B.; Mout, H.C.A. New York : Plenum Press. Environmental science research. Paper presented at the "Symposium on Short-Term Genetic Bioassays in the Evaluation of Complex Environmental Mixtures," 1984, Chapel Hill, North Carolina. 1985. v. 32. p. 65-73. ill. Includes references. (NAL Call No.: DNAL TD172.E55).

0834

Study materials for pesticide applicator certification .
Hartford, Conn. : State of Connecticut, Dept. of Environmental Protection, 1990? . Information for commercial supervisory or operational license applicants, procedures for taking examinations, and categorical lists of helpful materials to use in preparing for pesticide applicator certification examinations in Connecticut are included in this packet. Title supplied by cataloger.~ Loose-leaf format. i v. : ill. ; 28 cm. Includes bibliographical references. (NAL Call No.: DNAL SB952.86.S7).

0835

Subchronic inhalation toxicity of 1,3-dichloropropene/1,2-dichloropropane (D-D) in mice and rats (Soil fumigants).
Parker, C.M. Coate, W.B.; Voelker, R.W.
Washington, D.C., Hemisphere Publishing.
Journal of toxicology and environmental health.
May/June 1982. v. 9 (5/6). p. 899-910. 2 p.
ref. (NAL Call No.: RA565.A1J6).

0836

Sulfur dioxide fumigation of table grapes: relative sorption of SO₂ by fruit and packages, SO₂ residues, decay, and bleaching.
AJEVA. Harvey, J.M. Harris, C.M.; Hanke, T.A.; Hartsell, P.L. Davis, Calif. : American Society of Enologists. American journal of enology and viticulture. 1988. v. 39 (2). p. 132-136.
Includes references. (NAL Call No.: DNAL 390.9 AM33).

0837

Tests of various aliphatic compounds as fumigants by R.C. Roark and R.T. Cotton. --.
Roark, R. C. (Ruric Creegan). Washington, D.C.
U.S. Dept. of Agriculture 1929. 52 p. --.
Includes bibliographical references. (NAL Call No.: Fiche S-69 no.162).

0838

Tissue levels of glutathione following acute inhalation of 1,3-dichloropropene.
JTEHD6. Fisher, G.D. Kilgore, W.W. Washington, D.C. : Hemisphere Publishing. Journal of toxicology and environmental health. 1988. v. 23 (2). p. 171-182. Includes references. (NAL Call No.: DNAL RA565.A1J6).

0839

Toxicologic and reproductive effects of inhaled 1,2-dibromo-3-chloropropane in rats (Nematicides, soil fumigants).
Rao, K.S. Burek, J.D.; Murray, F.J.; John, J.A.; Schwetz, B.A. Akron : Society of Toxicology. Fundamental and applied toxicology. Mar/Apr 1983. v. 3 (2). p. 104-110. Includes references. (NAL Call No.: RA1190.F8).

0840

Toxicology and hazard assessment of 1,3-dichloropropene (Telone II).
AEHLA. Albrecht, W.N. Washington, D.C. : Heldref Publications. Archives of environmental health. Sept/Oct 1987. v. 42 (5). p. 292-296.
Includes references. (NAL Call No.: DNAL RC963.A1A7).

0841

Toxicology of carbon disulfide: a review (Used as a fumigant).
Coppock, R.W. Buck, W.B.; Mabee, R.L.
Manhattan, Kan., American College of Veterinary Toxicologists. Veterinary and human toxicology. Oct 1981. Literature review. v. 23 (5). p. 331-336. 55 ref. (NAL Call No.: SF601.A47).

0842

United States Environmental Protection Agency label improvement program for fumigants.
Fresvik, M.K. Milwaukee, Wis.? : The Association?, 1985? . Proceedings, Barley Insect Conference : January 9, 1985, Minneapolis Plaza Hotel, Minneapolis, Minnesota / sponsored by American Malting Barley Association. p. 39-44. (NAL Call No.: DNAL SB608.B2B2 1985).

0843

Why do fumigants remain in soils and ground water for decades?.
FOPSA. Sawhney, B.L. New Haven, Conn. : The Station. Frontiers of plant science - Connecticut Agricultural Experiment Station. Spring 1988. v. 40 (2). p. 2-3. Includes references. (NAL Call No.: DNAL 100 F92).

0844

Why does a volatile pesticide, like EDB, persist in soils for years?.
FOPSA. Sawhney, B.L. New Haven, Conn. : The Station. Frontiers of plant science - Connecticut Agricultural Experiment Station. Fall 1986. v. 39 (1). p. 3-5. ill. (NAL Call No.: DNAL 100 F92).

0845

Wood damaging pest control category 7A / Judy Bertholf, Steve McKinzie .
Bertholf, Judy. McKinzie, Steven. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1986 . Abstract: This study manual for commercial pesticide applicators explains how to identify, recognize damage caused by, and control termites and other wood damaging pests. It includes information on the selection, proper application and safe use of termitic ides and fumigants, protective clothing and respiratory devices. It contains a key to insect damage of wood, practice multiple choice study questions, and construction diagrams. Cover title.~ At head of title: Commercial pesticide applicator certification and recertification study manual.~ Earlier ed. written by Dell E. Gates, Lynne C. Thompson, and Vernon McKinzie.". 31 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.K2G32 1986).

(PESTICIDES - GENERAL)

0846

1988 disease management guide for commercial vegetable growers /prepared by M.C. Shurtleff, R.E. Wagner, and T.A. Melton.
Shurtleff, Malcolm C. Wagner, R. E.; Melton, Thomas A. Urbana, Ill. : University of Illinois at Urbana-Champaign, College of Agriculture, Cooperative Extension Service, 1987 .
Abstract: This Illinois guide for commercial vegetable growers provides condensed disease management recommendations for commercial vegetable crop diseases for 1988. Fungicide use restrictions, label information on fungicides and nematicides, and suggestions on fungicide application, soil fumigation and nematicide use are included. Discusses IPM (Integrated Pest Management) practices and proper pesticide use. Caption title.~ "Revised annually."~ "November 1987." 8 p. ; 28 cm. (NAL Call No.: DNAL 275.29 I162C no.1184 1987).

0847

1988 insect pest management guide stored grain /prepared by Richard A. Weinzierl.
Weinzierl, Richard A. Urbana, Ill. : University of Illinois at Urbana-Champaign, College of Agriculture, Cooperative Extension Service, 1987 . Abstract: This annually revised guide contains insecticide and cultural control recommendations for managing stored-grain insect pests. Integrated pest management (IPM) concepts and applicator certification requirements for applying insecticides and fumigants are discussed. Addresses and telephone numbers of Illinois Poison Resource Centers and sources of additional information are provided. Caption title.~ "November 1987." 7 p. ; 28 cm. Includes bibliographical references (p. 7). (NAL Call No.: DNAL 275.29 I162C no.1242 1987).

0848

1988 Oklahoma Grain Elevator Workshops February 2, Chickasha, February 3, Enid, February 4, Woodward /sponsored by Cooperative Extension Service, Division of Agriculture, Oklahoma State University ; in cooperation with Farmers Cooperative Grain Dealers Association of Oklahoma, Oklahoma Grain and Feed Association, Oklahoma Wheat Commission.
Stillwater, Okla.? : The Service, 1988 .
Abstract: This manual is composed of the presentations given at the 1988 Oklahoma Grain Elevator Workshops held February 2-4. Topics covered include overview of grain industry, one year sequence of stored grain management; storage production and chemical insect control; receiving and handling; grain blending; fumigation; integrated pest management; and aeration of commercial grain structures. Grain elevator maintenance guides, inspection checklists and housekeeping reports are provided. Cover title. 1 v. (various pagings) : ill. ; 29 cm. (NAL Call No.: DNAL SB190.04 1988).

SOIL SCIENCE

0849

Comparative studies of three soil fumigants for wireworm control by William C. Cook. -.

Cook, William C. (William Carmichael), 1895.
Washington, D.C. U.S. Dept. of Agriculture
1949. 22 p. : ill. --. Bibliography: p. 22.
(NAL Call No.: Fiche S-69 no.980).

SOIL BIOLOGY

0850

Changes in cytoplasmic carbon and nitrogen pools in a soil bacterium and a fungus in response to salt stress.

APMBA. Schimel, J.P. Scott, W.J.; Killham, K. Washington, D.C. : American Society for Microbiology. The effects of water potential on the cellular compositions of a soil bacterium and a fungus were examined by growing the organisms in media with various KCl concentrations. In media containing up to 1 M KCl, C/N ratios in *Aspergillus flavus* increased significantly, while those for a *Pseudomonas* sp. did not. For both organisms, the proportions of cellular C and N in cytoplasm increased by a factor of 10 as salinity increased from 0 to 1 M KCl. Such compositional changes have implications for microbial biomass dynamics in soils of varying water potential and for biomass measurement by chloroform fumigation. Applied and environmental microbiology. June 1989. v. 55 (6). p. 1635-1637. Includes references. (NAL Call No.: DNAL 448.3 AP5).

0851

Comparison of two rates of methyl bromide soil fumigation for control of *Fusarium oxysporum* of carnations.

Besemer, S.T. CA. McCain, A.H. Berkeley, The Service. Flower and nursery report for commercial growers. California. University, Berkeley. Cooperative Extension Service. Winter 1979. Winter 1979. p. 5-6. ill. (NAL Call No.: SB1.A1F5).

0852

The costs of a ban on soil fumigants.

Harrison, J. Washington, D.C. : The Service. Farmline - U.S. Department of Agriculture, Economic Research Service. July 1989. v. 10 (7). p. 9. (NAL Call No.: DNAL aHD1401.A2U52).

0853

Dynamics of the entomogenous nematode *Steinernema feltiae* applied to soil with and without nematicide treatment.

JONEB. Ishibashi, N. Kondo, E. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Oct 1987. v. 19 (4). p. 404-412. Includes references. (NAL Call No.: DNAL QL391.N4U62).

0854

Effect of soil fumigation on nitrogenase activity (C₂H₂ reduction) of tropical legumes.

Reddy, K.C. Prine, G.M.; Gaskins, M.H. S.I. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1984. v. 43. p. 132-137. ill. Includes 22 references. (NAL Call No.: DNAL 56.9 S032).

0855

Effect of soil fumigation on N₂ (nitrogen)-fixation and yield of field bean when grown on *Fusarium*-infested soils (Kidney beans, Washington).

Bezdicsek, D.F. Vigue, G.T.; Burke, D. Madison, Wis., American Society of Agronomy. Agronomy journal. Nov/Dec 1981. v. 73 (6). p. 1062-1065. ill. (NAL Call No.: 4 AM34P).

0856

Effect of tuber source and fumigation on *Caladium* tuber production in two soil management systems.

Overman, A.J. PFSHA. Harbaugh, B.K. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 175-178. Includes references. (NAL Call No.: 81 F66).

0857

Effects of fumigation on soil pathogens and beneficial microorganisms.

James, R.L. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 29-34. Includes references. (NAL Call No.: DNAL aSD11.A42).

0858

Effects of fumigation with hydrogen fluoride on the loading of ¹⁴C sucrose into the phloem of soybean leaves.

ETOC DK. Madkour, S. Weinstein, L.H. Elmsford, N.Y. : Pergamon Press. Environmental toxicology and chemistry. 1988. v. 7 (4). p. 317-320. Includes references. (NAL Call No.: DNAL QH545.A1E58).

0859

Effects of methyl bromide dosage on microorganisms in soil before and after growth of *Nicotiana glutinosa* (Soil fumigation).

Millhouse, D.E. Munnecke, D.E. St. Paul, Minn., American Phytopathological Society. Phytopathology. Apr 1981. v. 71 (4). p. 418-421. 10 ref. (NAL Call No.: 464.8 P56).

0860

Effects of pesticides on ammonification.
Narayana Rao, V.V.S. Boca Raton, Fla. : CRC Press, c1988. Pesticides and nitrogen cycle / editors, Rup Lal, Sukanya Lal. Literature review. v. 2 p. 1-36. Includes references. (NAL Call No.: DNAL QH545.P4P48).

0861

Effects of pesticides on nitrification and denitrification.

Dhanaraj, P.S. Boca Raton, Fla. : CRC Press, c1988. Pesticides and nitrogen cycle / editors, Rup Lal, Sukanya Lal. Literature review. v. 2 p. 43-118. Includes references. (NAL Call No.: DNAL QH545.P4P48).

0862

Ethylene dibromide mineralization in soils under aerobic conditions.

APMBA. Pignatello, J.U. Washington, D.C. : American Society for Microbiology. Applied and environmental microbiology. Mar 1986. v. 51 (3). p. 588-592. Includes 22 references. (NAL Call No.: DNAL 448.3 AP5).

0863

Host and soil fumigation effects on spore population densities of species of endogonaceous mycorrhizal fungi.

McGraw, A.C. Hendrix, J.W. Bronx : The New York Botanical Garden. Mycologia. Jan/Feb 1984. v. 76 (1). p. 122-131. Includes references. (NAL Call No.: 450 M99).

0864

How to use methyl bromide (Soil fumigant).

Brown, E.A. II. Athens, Ga., The Service. Leaflet - Cooperative Extension Service, University of Georgia. May 1982. May 1982. (17). 4 p. ill. (NAL Call No.: 275.29 G29L).

0865

Interaction among mycorrhizae, soil solarization, metalaxyl, and plants in the field.

PLDIDE. Afek, U. Menge, J.A.; Johnson, E.L.V. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1991. v. 75 (7). p. 665-671. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0866

Interaction of endomycorrhizal fungi, superphosphate, and Meloidogyne incognita on cotton in microplot and field studies.
JONEB. Smith, G.S. Roncadori, R.W.; Hussey, R.S. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Apr 1986. v. 18 (2). p. 208-216. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0867

Microbial biomass in paddy soil. II. "Microbial biomass carbon" measured by Jenkinson's fumigation method.

SOSCAK. Hasebe, A. Kanazawa, S.; Takai, Y. Baltimore, Md. : Williams & Wilkins. Soil science. Sept 1985. v. 31 (3). p. 349-359. 111. Includes 10 references. (NAL Call No.: DNAL 56.8 S03).

0868

Microbial biomass measurement in acidic soil: effect of fungal:bacterial activity ratios and of soil amendment.

SOSCAK. Tate, R.L. Baltimore, Md. : Williams & Wilkins. Soil science. Sept 1991. v. 152 (3). p. 220-225. Includes references. (NAL Call No.: DNAL 56.8 S03).

0869

Plant growth and yield of day-neutral and June-bearing strawberry cultivars in response to soil fumigation.

Gleason, M.L. Nonnecke, G.R.; Fear, C.D. S.I. : North American Strawberry Growers Association. Advances in strawberry production. 1989. v. 8. p. 51-54. Includes references. (NAL Call No.: DNAL SB385.A34).

0870

Recertification manual for private pesticide applicators : soil fumigation / by Michigan Department of Agriculture, Plant Industry Division. -.

(S.I.) The Dept. (1982?). Cover title ~Pesticide Applicator Training collection. 4 leaves ; 28 cm. (NAL Call No.: SB950.2.M5R43).

0871

Recommendations for (methyl bromide) soil fumigation in apple orchards.

Koch, B.L. WA. Covey, R.P. Pullman, Wash., The Service. EM - Cooperative Extension Service, Washington State University. Washington State University. Cooperative Extension Service. Jan 1980. Jan 1980. (3830). 2 p. (NAL Call No.: 275.29 W27MI).

(SOIL BIOLOGY)

0872

Relationship between microbial biomass nitrogen and a nitrogen availability index.
SSSJD4. Myrold, D.D. Madison, Wis. : The Society. Soil Science Society of America journal. July/Aug 1987. v. 51 (4). p. 1047-1049. Includes references. (NAL Call No.: DNAL 56.9 S03).

0873

Response of soybeans and soybean pathogens to soil fumigation and foliar fungicide sprays.
Kittle, D.R. Gray, L.E. St. Paul, Minn., American Phytopathological Society. Plant disease. Mar 1982. v. 66 c (3). p. 213-215. Includes 20 ref. (NAL Call No.: 1.9 P69P).

0874

A review of pesticide effects on microorganisms and microbial processes related to soil fertility.

JPRAEN. Moorman, T.B. Madison, Wis. : American Society of Agronomy. Journal of production agriculture. Literature review. Jan/Mar 1989. v. 2 (1). p. 14-23. Includes references. (NAL Call No.: DNAL S539.5.J68).

0875

The role of V-A-M in high phosphorus sorbing soils.

Krikun, J. Haas, J.; Bar-Joseph, B. Corvallis, Or. : Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USOA. p. 287. Includes references. (NAL Call No.: DNAL aQK604.N6 1984).

0876

Soil fumigation.

Riedel, R. M. Farley, J. O.; Powell, C. C. 1980. This publication discusses factors that affect soil fumigation, application, properties of fumigants, non-fumigant nematicides, and tables on soil fumigants and non-fumigant nematicides used in Ohio. Document available from: Ext. Office of Information, Ohio State University, 2120 Fyffe Road, Columbus, OH 43210. 7 p. : ill. (NAL Call No.: Not available at NAL.). (NAL Call No.: L249).

0877

Soil fumigation / author, R.M. Riedel .
Riedel, R. M. Columbus, Ohio? : Ohio Cooperative Extension Service, Ohio State University, 1987. Abstract: This publication describes soil fumigation goals, factors influencing successful soil fumigation, application methods, equipment, calibration procedures, and properties of six commonly used soil fumigants. Includes addresses and telephone numbers of Poison Information Centers in Ohio and surrounding states. Cover title.~ "Agdex 500/606."~ "L-249.". 1 folded sheet (6 p.) : ill. ; 28 cm. (NAL Call No.: DNAL SB973.3.R5 1987).

0878

Soil fumigation and sterilization.

Stevenson, W.R. Madison, Wis. : The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. Jan 1985. (A2330). 2 p. (NAL Call No.: DNAL S544.3.W6W53).

0879

Soil fumigation and sterilization.

Stevenson, W.R. WI. Madison, Wis., The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. Wisconsin. University. Cooperative Extension Programs. Jan 1980. Jan 1980. (A2330). 2 p. (NAL Call No.: S544.3.W6W53).

0880

Soil fumigation and treatment to control soil-borne diseases and nematodes in home gardens.

Barnes, G.L. Conway, K.E.; Russell, C.C.; Pratt, P.W. Stillwater, Okla. : The Service. OSU extension facts - Cooperative Extension Service, Oklahoma State University. Aug 1984. (7614,rev.). 4 p. (NAL Call No.: ONAL S544.3.0505).

0881

Soil fumigation in bareroot tree nurseries.

Landis, T.D. Campbell, S.J. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 13-28. ill. Includes references. (NAL Call No.: DNAL aSD11.A42).

0882

Soil fumigation manual.

WUEXA. Pullman, Wash. : The Service. Extension bulletin - Washington State University, Cooperative Extension Service. Sept 1985. (1336). 10 p. Includes references. (NAL Call No.: DNAL 275.29 W27P).

0883

Spatial patterns of *Verticillium dahliae* propagules in potato field soils of Oregon's Columbia Basin.

PLDIDE. Johnson, K.B. Apple, J.D.; Powelson, M.L. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1988. v. 72 (6). p. 484-488. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0884

Survival of *Xanthomonas campestris* pv. *citri* in citrus plant debris and soil in Florida and Argentina.

PLDIDE. Graham, J.H. McGuire, R.G.; Miller, J.W. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1987. v. 71 (12). p. 1094-1098. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0885

Sweetgum seedling growth and vesicular-arbuscular mycorrhizal development as affected by soil fumigation.

SSSJD4. Snyder, C.S. Davey, C.B. Madison, Wis. : The Society. Soil Science Society of America journal. July/Aug 1986. v. 50 (4). p. 1047-1051. Includes references. (NAL Call No.: DNAL 56.9 S03).

0886

Tomato production and soil pest control in relation to width of fumigated and mulched bed and soil fumigation rate.

Jaworski, C.A. Phatak, S.C.; Johnson, A.W.; McCarter, S.M. Alexandria, Va., American Society for Horticultural Science. HortScience. Oct 1981. v. 16 (5). p. 667-669. 17 ref. (NAL Call No.: SB1.H6).

0887

Vapam injection in irrigation water for soil fumigation.

Farwell, B.J. College Park : Maryland State Horticultural Society. Maryland fruit grower. 1983. 1983. (suppl.). p. 97-100. (NAL Call No.: 80 M36).

SOIL CHEMISTRY AND PHYSICS

0888

EDB: persistence in soil.

SCIEA. Pignatello, J.J. Sawhney, B.L.; Frink, C.R. Washington, D.C. : American Association for the Advancement of Science. Science. May 22, 1987. v. 236 (4804). p. 898. Includes references. (NAL Call No.: DNAL 470 SC12).

0889

Effect of biocidal treatments on cation exchange capacity and fusarium blight of soybean in Delaware soils.

AGJOAT. Sandler, H.A. Carroll, R.B.; Sparks, D.L. Madison, Wis. : American Society of Agronomy. Fusarium wilt has caused significant losses in soybean Glycine max (L.) Merr. production and is very difficult to control because it is caused by the soil-borne fungus Fusarium oxysporum. A better understanding of the relationship between soil characteristics and the pathogen and between biocidal treatments and physiochemical properties is needed, especially for soils that appear to be suppressive. The effects of autoclaving and Vapam fumigation on cation exchange capacity, organic matter content, clay content, pH, and Fusarium wilt of soybean were determined for several different Delaware soil types (Typic Hapludults, Typic Quartzipsamments, and Typic Umbraquults). 'Essex' soybean was grown in the treated soils that had been infested, prior to planting, with 6.3×10^4 viable spores per gram of dry soil of a pathogenic Fusarium oxysporum isolate. Treatments were arranged on the greenhouse bench in a randomized complete-block design with five replications. Cation exchange capacity generally increased with fumigation and decreased with autoclaving, but differences were not significant for all soils. Organic matter content increased following fumigation in three soils, and pH values were lowered by both biocidal treatments in all soils except a Matapeake silt loam. Disease incidence and severity were affected differently for each soil type. Agronomy journal. Jan/Feb v. 80 (1). p. 8-12. Includes references. (NAL Call No.: DNAL 4 AM34P).

0890

Effects of sulfur dioxide fumigation in open-top field chambers on soil acidification and exchangeable aluminum (Tomato, Lycopersicon esculentum, acid rain, air pollution).

Lee, E.H. Heggestad, H.E.; Bennett, J.H. Madison, Wis., American Society of Agronomy. Journal of environmental quality. Jan/Mar 1982. v. 11 (1). p. 99-102. 111. 26 ref. (NAL Call No.: QH540.J6).

0891

Incorporation of a wide variety of organic substrate carbons into soil biomass as estimated by the fumigation procedure.

Kassim, G. Martin, J.P.; Haider, K. Madison, Wis., The Society. Soil Science Society of America journal. Nov/Dec 1981. v. 45 (6). p. 1106-1112. Includes 37 ref. (NAL Call No.: 56.9 S03).

0892

Microbial biomass measurement in acidic soil: effect of fungal:bacterial activity ratios and of soil amendment.

SOSCAK. Tate, R.L. Baltimore, Md. : Williams & Wilkins. Soil science. Sept 1991. v. 152 (3). p. 220-225. Includes references. (NAL Call No.: DNAL 56.8 S03).

0893

Movement and transformation of 1,3-dichloropropene in the soil of flower-bulb fields.

AECTCV. Van der Pas, L.J.T. Leistra, M. New York, N.Y. : Springer-Verlag. Archives of environmental contamination and toxicology. July 1987. v. 16 (4). p. 417-422. Includes references. (NAL Call No.: DNAL TD172.A7).

0894

Movement of DBCP (1,2-dibromo-3-chloropropane) in laboratory soil columns and field soils to groundwater (Fumigant used for nematode control, California).

Biggar, J.W. Nielsen, D.R.; Tillotson, W.R. New York : Springer. Environmental geology. 1983/1984. v. 5 (3). p. 127-131. Includes references. (NAL Call No.: QE1.E5).

0895

Persistence of terbutryn and atrazine in soil as affected by soil disinfection and fungicides.

WEESA6. Avidov, E. Aharonson, N.; Katan, J.; Rubin, B.; Yarden, O. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 457-461. Includes 16 references. (NAL Call No.: DNAL 79.8 W41).

0896

Soils suppressive to black root rot of burley tobacco, caused by Thielaviopsis basicola.

PHYTA. Meyer, J.R. Shew, H.D. St. Paul, Minn. : American Phytopathological Society. Soils suppressive to black root rot were detected in fields in which the pathogen was present but in which little or no disease had developed on susceptible cultivars of burley tobacco.

Suppressive soils were characterized by low base saturation, low calcium, exchangeable aluminum levels of 1 meq/100 g of soil or higher, and soil pH less than 5. Suppressiveness was confirmed under controlled environmental conditions with fumigated field soils reinfested with *Thielaviopsis basicola*. Isolates of *T. basicola* from suppressive soils caused black root rot when placed in conducive soil, indicating that the absence of disease was not due to differences in pathogen virulence. The mechanism of suppression was not biotic; autoclaving soil had no effect on suppressiveness, and transfer of suppressive soil to conducive soil (fumigated soil; 1:9, by volume) did not induce suppressiveness. Soil calcium level was not the mechanism of suppression because amending suppressive soils with calcium hydroxide nullified suppressiveness and amending soils with calcium sulfate did not. Disease developed in acidified conducive soil only if exchangeable aluminum levels were low. The acidification treatments had no effect on the inoculum density of the fungus, and the survival of the chlamydospores of *T. basicola* was not affected by the soil or soil treatments. Mechanisms of soil suppression to black root rot on burley tobacco are abiotic and dependent on the interrelationships among soil pH, base saturation, and exchangeable aluminum. *Phytopathology*. Sept 1991. v. 81 (9). p. 946-954. Includes references. (NAL Call No.: DNAL 464.8 P56).

0897

Transport and transformation of methyl bromide in soils.

Brown, B.D. Rolston, D.E. Baltimore, Williams & Wilkins. *Soil science*. Aug 1980. v. 130 (2). 68-75. ill. 14 ref. (NAL Call No.: 56.8 S03).

SOIL FERTILITY - FERTILIZERS

0898

Aspergillus fumigatus aerospora associated with municipal sewage sludge composting operations in the state of Maine.

Passman, F.J. Silver Spring, Md., Hazardous Materials Control Research Institute. Proceedings ... National conference on municipal and industrial sludge composting operation, design, marketing, health issues. 1980. 1980. p. 159-167. ill. Includes 12 ref. (NAL Call No.: TD796.5.N3).

0899

Characterization of phosphorus efficiencies of two winter wheat cultivars.

SSSJD4. Gardiner, D.T. Christensen, N.W. Madison, Wis. : The Society. 'Stephens' and 'Yamhill' winter wheat (*Triticum aestivum* L.) cultivars respond differently to P fertilization on low-P soils. The objective of this study was to determine the reason for greater P efficiency in Yamhill. The cultivars were grown in three growth-chamber experiments to describe response to a factorial combination of P levels and soil fumigation, and to compare root growth rates, root hair formation, and tissue P concentrations. Cultivars did not differ in root growth rate, total P uptake, or response to fumigation. Root hair length was affected by an interaction between cultivars and P concentrations in the growth medium. At the 2 microM P level, Yamhill had significantly ($P = 0.05$) longer root hairs than Stephens. Yamhill produced significantly greater shoot dry weight per unit of P taken up (0.20 g mg^{-1}) than Stephens (0.17 g mg^{-1}). The greater P efficiency of Yamhill was attributed to greater P-use efficiency rather than to differences in P uptake. Soil Science Society of America journal. Sept/Oct 1990. v. 54 (5). p. 1337-1340. Includes references. (NAL Call No.: DNAL 56.9 S03).

0900

Effect of plastic mulch and fumigation on tomato yield.

Kearney, N.S. Jr. Coffey, D.L. Knoxville, Tenn. : The Station. Tennessee farm and home science - Tennessee Agricultural Experiment Station. Oct/Dec 1982. Oct/Dec 1982. (124). p. 2-4. ill. Includes references. (NAL Call No.: 100 T25F).

0901

Effects of methyl bromide fumigation, black plastic mulch, and fertilizer level on yield and quality of tomatoes.

Mullins, C.A. Coffey, D.L. Knoxville, Tenn. : The Station. Tennessee farm and home science - Tennessee Agricultural Experiment Station. Apr/June 1982. Apr/June 1982. (122). p. 11-13. Includes references. (NAL Call No.: 100 T25F).

0902

A guide to the recent literature on aspergillosis as caused by *Aspergillus fumigatus* (found to be abundant in the atmosphere where large-scale experimental composting of sewage sludge is in progress at Beltsville).

Marsh, P.B. AR-NE-AR-BARC. Millner, P.D.; Kila, J.M. Beltsville, Md., The Region. Agricultural reviews and manuals ARM-NE - U.S. Dept. of Agriculture, Science and Education Administration. United States. Dept. of Agriculture, Science and Education Administration. Agricultural Research. Northeastern Region. Sept 1979. Literature review. Sept 1979. (5). 28 p. 173 ref. (NAL Call No.: AS21.A75U63).

0903

Interaction of endomycorrhizal fungi, superphosphate, and *Meloidogyne incognita* on cotton in microplot and field studies.

JONEB. Smith, G.S. Roncadori, R.W.; Hussey, R.S. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Apr 1986. v. 18 (2). p. 208-216. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0904

Off-season land management, soil solarization and fumigation for tomato.

Overman, A.J. S.I. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1985. v. 44. p. 35-39. ill. Includes 9 references. (NAL Call No.: DNAL 56.9 S032).

0905

Response of 'Redchief' strawberry to soil profile modification, soil fumigation and bedtype in the Missouri Ozark Region.

Kaps, M.L. Odneal, M.B. S.I. : North American Strawberry Growers Association. Advances in strawberry production. Spring 1986. v. 5. p. 18-21. Includes references. (NAL Call No.: DNAL SB385.A34).

0906

A review of pesticide effects on microorganisms and microbial processes related to soil fertility.

JPRAEN. Moorman, T.B. Madison, Wis. : American Society of Agronomy. Journal of production agriculture. Literature review. Jan/Mar 1989. v. 2 (1). p. 14-23. Includes references. (NAL Call No.: DNAL S539.5.J68).

0907

The role of V-A-M in high phosphorus sorbing soils.

Krikun, J. Haas, J.; Bar-Joseph, B. Corvallis, Or. : Oregon State University, Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 287. Includes references. (NAL Call No.: DNAL aQK604.N6 1984).

0908

Soil pH and nitrogen influence *Pisolithus ectomycorrhizal* development and growth of loblolly pine seedlings.

FOSCA. Marx, D.H. Bethesda, Md. : Society of American Foresters. Five families of loblolly pine were grown from April to February in fumigated soil at pH 4.8, 5.8, and 6.8. All microplots received vegetative inoculum of *Pisolithus tinctorius* (Pt) and three, six, or nine applications of NH_4NO_3 at 50 kg N/ha/application through August, which totaled 150, 300, or 450 kg N/ha. Vegetative inoculum of Pt buried in soil lost significant viability after 54 days at soil pH 6.8. Inoculum viability declined in all treatments after 81 days, but it was only a little over a third as viable at pH 6.8 as at lower pH levels. Up to three applications of NH_4NO_3 at 50 kg N/ha each did not affect inoculum viability. The five test families of loblolly pine reacted similarly to soil treatments. Seedling heights, root-collar diameters, and top dry weights were more affected by soil pH than by application of N. As soil pH increased, seedling growth decreased. Dry weight of roots, total length of lateral roots, and number of short roots were not significantly influenced by either soil treatment. Total Pt ectomycorrhizal ratings (combining number of mycorrhizae and proportion of different morphological types) were about one-fourth as much at pH 6.8 as in more acid soil conditions. Applications of NH_4NO_3 resulting in soil concentrations of $\text{NO}_3\text{-N}$ ranging from 60 to 120 kg/ha and $\text{NH}_4\text{-N}$ ranging from 90 to 130 kg/ha at pH 4.8 and 5.8 were associated with the most abundant Pt ectomycorrhizal development. Increased N applications increased Pt development at pH 5.8 and 6.8. Calcium equivalent treatments, using CaSO_4 at similar Ca concentrations, suggested seedling response was due to soil pH and not Ca concentrations. Forest science. June 1990. v. 36 (2). p. 224-245. Includes references. (NAL Call No.: DNAL 99.8 F7632).

SOIL CULTIVATION

0909

The effects of pathogen numbers and tillage on root disease severity, root length, and seed yields in green peas.

PLDIDE. Kraft, J.M. Wilkins, D.E. St. Paul, Minn. : American Phytopathological Society. Plant disease. Nov 1989. v. 73 (11). p. 884-887. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0910

Effects of two-year crop rotations and cultivar resistance on bacterial wilt in flue-cured tobacco.

PLDIDE. Melton, T.A. Powell, N.T. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1991. v. 75 (7). p. 695-698. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0911

Record pepper yields (Plastic mulch, fumigation, and trickle irrigation, New Jersey).

Kovalchuk, S. Willoughby, Ohio : Meister Publishing Company. American vegetable grower. Feb 1983. v. 31 (2). p. 44, 46-47. (NAL Call No.: 80 C733).

0912

Tennessee growers are making the most of mulch.

Coffey, D.L. Willoughby, Ohio : Meister Publishing Company. American vegetable grower. Apr 1984. v. 32 (4). p. 12, 32. ill. (NAL Call No.: DNAL 80 C733).

0913

Yield component comparison of strawberry plants grown in various cultural systems.

Popenoe, J. Swartz, H.J. s.l. : North American Strawberry Growers Association. Advances in strawberry production. Spring 1985. v. 4. p. 10-14. Includes 11 references. (NAL Call No.: DNAL SB385.A34).

FORESTRY RELATED

0914

Acute ozone stress on eastern cottonwood (*Populus deltoides* Bartr.) and the pest potential of the aphid, *Chaitophorus populicola* Thomas (Homoptera: Aphididae).
 EVETEX. Coleman, J.S. Jones, C.G. College Park, Md. : Entomological Society of America. The effect of acute ozone exposure of eastern cottonwood (*Populus deltoides* Bartr.) on the survivorship, reproduction, and development of the aphid *Chaitophorus populicola* Thomas (Homoptera: Aphididae) was investigated. Cottonwoods were exposed to 397 microgram/m³ (0.20 ppm) ozone or charcoal-filtered air and infested with aphids on leaf plastochron index 5, 40 h after fumigation. Aphid performance was not significantly different on plants exposed to ozone compared with charcoal-filtered air-treated control plants. These data do not support the notion that aphid performance will directly increase on air pollution-stressed plants. We also examined settling and feeding preference of aphids for cottonwood leaves of different developmental ages. Aphids significantly preferred leaf plastochron index 5 to all other leaf ages. These data support hypotheses relating aphid leaf preference to stages of leaf development. Reproduction of the cottonwood leaf rust fungus (*Melampsora medusae* Thum.) and the imported willow leaf beetle (*Plagioderma versicolora* Laicharting) are reduced on ozone-fumigated plants (reported elsewhere). If aphid populations are affected by competition with these cottonwood pests for leaf resources, then aphid pest potential may actually increase in areas characterized by episodic ozone concentrations because of ozone-induced decreases in populations of *M. medusae* and *P. versicolora*. *Environmental entomology*. Apr 1988. v. 17 (2). p. 207-212. Includes references. (NAL Call No.: DNAL QL461.E532).

0915

Basamid and solar heating effective for control of plant-parasitic nematodes at Bessey Nursery, Nebraska.
 Hildebrand, D.M. Dinkel, G.B. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a meeting of the Western Forest Nursery Associations, Aug 8-11, 1988, Vernon, British Columbia. Dec 1988. (167). p. 139-144. Includes references. (NAL Call No.: DNAL aSD11.A42).

0916

Comparison of three soil fumigants in a barefoot conifer nursery.
 TPLNA. Campbell, S.J. Kelpsas, B.R. Washington, D.C. : The Service. Tree planters' notes - U.S. Department of Agriculture, Forest Service. Fall 1988. v. 39 (4). p. 16-22. Includes references. (NAL Call No.: DNAL 1.962 C5T71).

0917

Dazomet use for seedbed fumigation at the PFRA Shelterbelt Centre, Indian Head, Saskatchewan.
 Alspach, L.K. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 40-42. ill. Includes references. (NAL Call No.: DNAL aSD11.A42).

0918

Effect of nursery-produced endomycorrhizal inoculum on growth of redwood seedlings in fumigated soil.
 TPLNA. Adams, D. Tidwell, T.; Ritchey, J.; Wells, H. Washington, D.C. : The Service. Tree planters' notes - U.S. Department of Agriculture, Forest Service. Summer 1990. v. 41 (3). p. 7-11. Includes references. (NAL Call No.: DNAL 1.962 C5T71).

0919

Effective soil fumigation (to control pathogenic fungi that cause root rot and damping-off in forest tree seedlings, methyl bromide, guidelines).
 Cordell, C.E. (Atlanta, Ga.) : The Region. Technical publication R8-TP - USDA Forest Service, Southern Region. Aug 1983. Proceedings of the 1982 Southern Nursery Conferences. Aug 1983. (4). p. 196-201. Includes references. (NAL Call No.: aSD11.U5962).

0920

Effects of fumigation on soil pathogens and beneficial microorganisms.
 James, R.L. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 29-34. Includes references. (NAL Call No.: DNAL aSD11.A42).

0921

Effects of soil fumigation and cover crops on potential pathogens, microbial activity, nitrogen availability, and seedling quality in conifer nurseries.
 PHYTA. Hansen, E.M. Myrold, D.D.; Hamm, P.B. St. Paul, Minn. : American Phytopathological Society. In three forest tree nurseries of the Pacific Northwest, fall fumigation with chloropicrin or dazomet led to an immediate increase in total microbial respiration and nitrogen availability, but levels were

(FORESTRY RELATED)

comparable to those in unfumigated plots when tree seedlings were sown in the next spring. Population densities of *Fusarium* spp. and *Pythium* spp. in fumigated plots were reduced dramatically and stayed significantly below those in unfumigated plots throughout the 2-yr crop cycle. Grass or legume cover crops increased pathogen population densities over those in bare, fallow plots before fumigation, and the trend continued throughout the crop cycle in unfumigated plots. At the end of the study, population densities of *Fusarium* in fallow, unfumigated plots were comparable to those in cover-cropped, fumigated plots. Seedling mortality was lower, and surviving seedlings were larger and more uniform on fallow and fumigated plots than on cover-cropped or unfumigated plots. *Phytopathology*. Aug 1990. v. 80 (8). p. 698-704. Includes references. (NAL Call No.: DNAL 464.8 P56).

0922

Effects of soil fumigation on conifer seedling production at the USDA Forest Service nursery, Coeur d'Alene, Idaho /by R.L. James, S. Metzger, C.J. Gilligan.

James, Robert L. Gilligan, Carma J. Missoula, Mont. : U.S. Dept. of Agriculture, Forest Service, Northern Region, 1990. Caption title.~ "May 1990.". 18 p. ; 28 cm. Includes bibliographical references (p. 7-9). (NAL Call No.: DNAL aSD11.U585 no.90-11).

0923

Emission of hydrogen sulfide from sulfur dioxide-fumigated pine trees (*Pinus sylvestris*).

Hallgren, J.E. Fredriksson, S.A. Rockville, Md., American Society of Plant Physiologists. *Plant physiology*. Aug 1982. v. 70 (2). p. 456-459. 15 ref. (NAL Call No.: 450 P692).

0924

Evaluation of methyl bromide, Basamid granular, and solar heating for pre-planting pest control for fall-sown eastern redcedar at Bessey Nursery.

Hildebrand, D.M. Dinkel, G.B. Denver : The Service. Technical report R2 - United States Forest Service, Forest Pest Management. Jan 1988. (41). 13 p. Includes references. (NAL Call No.: DNAL aSD11.A422).

0925

Forest spraying pesticide applicator's training manual /prepared by extension specialists at the University of Minnesota.

St. Paul, Minn. : Minnesota Extension Service, University of Minnesota, 1987. Abstract: This guide for the Minnesota commercial agricultural pesticide applicator is

prepared as a training aid for those applicators who wish to become certified to apply or supervise the application of "restricted-use" pesticides in Minnesota forests. The principles of forest pest management, the identification and control of insect, weed, disease and vertebrate pests, application equipment, calibration techniques, pesticide formulation, fumigation principles and other treatment methods are discussed. The toxicity of pesticides and their potential danger to humans, environmental hazards, safety precautions, label information, protective clothing, storage, and disposal are covered. A bibliography, questions and answers, and a glossary complete this manual. Cover title.~ "9/87."~ "G4418.". vi, 268 p. : ill. ; 28 cm. Includes bibliographical references (p. 195). (NAL Call No.: DNAL SB952.863.M6F6).

0926

Fumigation effect on soilborne pathogens, mycorrhizae, and growth of Douglas-fir seedlings.

Tanaka, Y. Russell, K.W.; Linderman, R.G. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a Meeting of the Combined Western Forest Nursery Council and Intermountain Nursery Association, August 12-15, 1986, Tumwater, Washington. Dec 1986. (137). p. 147-152. Includes references. (NAL Call No.: DNAL aSD11.A42).

0927

Growth and endomycorrhizal development of broadleaf seedlings in fumigated nursery soil (*Glomus fasciculatus*, *Glomus mosseae*).

Riffle, J.W. FS-RM. Washington, D.C., Society of American Foresters. *Forest science*. Sept 1980. v. 26 (3). p. 403-413. ill. 17 ref. (NAL Call No.: 99.8 F7632).

0928

Growth responses of woody species to long- and short-term fumigation with sulfur dioxide.

Jensen, K.F. FS-NE~FS-NE~FS-NC. Dochinger, L.S. Broomall, Pa., The Station. USDA Forest Service Research Paper NE - United States, Northeastern Forest Experiment Station. 1979. 1979. (442). 7 p. ill. 19 ref. (NAL Call No.: A99.9 F7622UN).

0929

The impact of sulfur dioxide fumigation on photosynthetic and ultrastructural responses of mesophyll cells in developing *Pinus strobus* needles. III. Transition zone.

Crang, R.E. Vassilyev, A.E.; Kravkina, I.M. Broomall, PA : Northeastern Forest Experiment Station, 1989? . Air pollution effects on

vegetation, including forest ecosystems : proceedings of the Second US-USSR Symposium / edited by Reginald D. Noble, Jurí L. Martin, and Keith F. Jensen. Papers presented at an International Conference, September 13-25, 1988, at Corvallis, Oregon; Raleigh, North Carolina; Gatlinburg, Tennessee. p. 91-96. ill. Includes references. (NAL Call No.: DNAL aQK751.U7 1988).

0930

Influence of disease management strategies on the production of white spruce in a forest tree nursery.

FOSCA. Enebak, S.A. Palmer, M.A.; Blanchette, R.A. Bethesda, Md. : Society of American Foresters. In a forest tree nursery dazomet, captan, thiram, captan-thiram combination, or silica sand did not reduce populations of three soilborne fungi. Preemergence mortality was greatest in nontreated plots, (56%) and least in plots treated with dazomet (46%). Nontreated plots had the most post-emergence damping off, (15%) and silica sand the least (3%). *Rhizoctonia solani* (AG-1) was isolated from 52% of damped-off seedlings collected while *Pythium* spp., *Fusarium* spp. and *Cylindrocladium* spp. were recovered from 24%, 23%, and 1% of the seedlings, respectively. Seedling mortality from May 18 to September 23, 1986, ranged from 28% in the dazomet plots to 61% in nontreated plots. At the end of the first growing season, plots treated with dazomet had significantly more seedlings than any other treatment. The incidence of stunted seedlings was greatest in plots treated with dazomet and least when seed was covered with silica sand. Silica sand or thiram treatments produced seedlings with the greatest total dry weights. *Forest science*. Dec 1989. v. 35 (4). p. 1006-1013. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0931

Laboratory comparisons of sulfuryl fluoride toxicity and mean time of mortality among ten termite species (Isoptera: Hodotermitidae, Kalotermitidae, Rhinotermitidae).

JEENAI. Osbrink, W.L.A. Scheffrahn, R.H.; Su, N.Y.; Rust, M.K. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. Oct 1987. v. 80 (5). p. 1044-1047. Includes references. (NAL Call No.: DNAL 421 J822).

0932

Methyl bromide fumigation at the Lone Peak State Forest Nursery, Utah.

Grierson, D.G. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 38-39. (NAL Call No.: DNAL aSD11.A42).

0933

Methyl bromide fumigation destroys broods of the smaller European elm bark beetle (Coleoptera: Scolytidae) in elm logs (*Scolytus multistriatus*, Georgia).

Hanula, J.L. Berisford, C.W. College Park, Entomological Society of America. *Journal of economic entomology*. Aug 1982. v. 75 (4). p. 688-690. 6 ref. (NAL Call No.: 421 J822).

0934

Microbial biomass measurement in acidic soil: effect of fungal:bacterial activity ratios and of soil amendment.

SOSCAK. Tate, R.L. Baltimore, Md. : Williams & Wilkins. *Soil science*. Sept 1991. v. 152 (3). p. 220-225. Includes references. (NAL Call No.: DNAL 56.8 S03).

0935

Movement of chloropicrin or methylisothiocyanate through the boles of Douglas-fir trees.

FOSCA. Morrell, J.J. Newbill, M.A. Bethesda, Md. : Society of American Foresters. Movement of the wood fumigants chloropicrin and methylisothiocyanate (MITC) through living Douglas-fir trees was evaluated at selected heights above treatment holes 18 and 42 months after treatment. Wood-sample extracts were analyzed by gas chromatography. After 18 months, concentrations of MITC were 10 to 30 times higher than those of chloropicrin. Concentrations of both chemicals were higher in heartwood than in the wetter sapwood. After 42 months, concentrations of both chemicals were much higher and apparent at greater distances from the point of application. MITC concentrations were again higher than those of chloropicrin, which has a lower water solubility that may limit diffusion. Both chemicals moved through Douglas-fir heartwood as far as 4 m from the application point over the 42 months. *Forest science*. Mar 1990. v. 36 (1). p. 192-195. ill. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0936

Movement of chloropicrin, vapam, and methylisothiocyanate in southern pine and Douglas fir timbers /by Terry L. Highley.

Highley, Terry L. Madison, WI : Forest Products Laboratory. 1987. Chiefly tables. ~ At head of title: The International Research Group on Wood Preservation, Working Group III-Preservatives and Methods of Treatment, Sub-Group 3-Remedial Treatments. ~ "Paper prepared for the eighteenth meeting, Honey Harbour, Ontario, Canada, May 17-22, 1987." ~ "19 February 1987." ~ "Document no.: IRG/WP/3410." 15 p. ; 28 cm. Bibliography: p. 15. (NAL Call No.: DNAL aSB955.H56).

(FORESTRY RELATED)

0937

Options in controlling soilborne pests.
McElroy, F.D. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a Meeting of the Combined Western Forest Nursery Council and Intermountain Nursery Association, August 12-15, 1986, Tumwater, Washington. Dec 1986. (137). p. 135-138. Includes references. (NAL Call No.: DNAL aSD11.A42).

0938

Phytophthora cinnamomi root rot in Pinus nurseries soil fumigation and disease prevention by hygiene.
Brown, B.N. Auburn, Ala.? : Orders, Dept. of Research Information, Auburn University, 1986? . Proceedings of the International Symposium on Nursery Management Practices for the Southern Pines, Montgomery, Alabama, August 4-9, 1985 / edited by David B. South. p. 507-514. Includes references. (NAL Call No.: DNAL SD397.P55I58 1985).

0939

Reduction of Phellinus weirii inoculum in Douglas-fir stumps by the fumigants chloropicrin, Vorlex, or methylisothiocyanate.
FOSCA. Thies, W.G. Nelson, E.E. Bethesda, Md. : Society of American Foresters. Forest science. June 1987. v. 33 (2). p. 316-329. Includes references. (NAL Call No. DNAL 99.8 F7632).

0940

Relationship between microbial biomass nitrogen and a nitrogen availability index.
SSSJD4. Myrold, D.D. Madison, Wis. : The Society. Soil Science Society of America journal. July/Aug 1987. v. 51 (4). p. 1047-1049. Includes references. (NAL Call No.: DNAL 56.9 SD3).

0941

Slash pine growth and response to fertilizer after application of pesticides to the planting site (Pinus elliotii var. elliotii, soil fumigation, Meloidodera floridensis).
Bengtson, G.W. Smart, G.C. Jr. Washington, D.C., Society of American Foresters. Forest science. Sept 1981. v. 27 (3). p. 487-502. 17 ref. (NAL Call No.: 99.8 F7632).

0942

Soil fumigation, cover cropping, and organic soil amendments: their effect on soil-borne pathogens and the target seedling.
Hamm, P.B. Hansen, E.M. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Dec 1990. (200). p. 174-180. Includes references. (NAL Call No.: DNAL aSD11.A42).

0943

Soil fumigation in Southern United States forest tree nurseries.
Cordell, C.E. Kelley, W.D. Auburn, Ala.? : Orders, Dept. of Research Information, Auburn University, 1986? . Proceedings of the International Symposium on Nursery Management Practices for the Southern Pines, Montgomery, Alabama, August 4-9, 1985 / edited by David B. South. p. 496-504. ill. Includes references. (NAL Call No.: DNAL SD397.P55I58 1985).

0944

Soil pH and nitrogen influence Pisolithus ectomycorrhizal development and growth of loblolly pine seedlings.
FOSCA. Marx, D.H. Bethesda, Md. : Society of American Foresters. Five families of loblolly pine were grown from April to February in fumigated soil at pH 4.8, 5.8, and 6.8. All microplots received vegetative inoculum of Pisolithus tinctorius (Pt) and three, six, or nine applications of NH₄N03 at 50 kg N/ha/application through August, which totaled 150, 300, or 450 kg N/ha. Vegetative inoculum of Pt buried in soil lost significant viability after 54 days at soil pH 6.8. Inoculum viability declined in all treatments after 81 days, but it was only a little over a third as viable at pH 6.8 as at lower pH levels. Up to three applications of NH₄N03 at 50 kg N/ha each did not affect inoculum viability. The five test families of loblolly pine reacted similarly to soil treatments. Seedling heights, root-collar diameters, and top dry weights were more affected by soil pH than by application of N. As soil pH increased, seedling growth decreased. Dry weight of roots, total length of lateral roots, and number of short roots were not significantly influenced by either soil treatment. Total Pt ectomycorrhizal ratings (combining number of mycorrhizae and proportion of different morphological types) were about one-fourth as much at pH 6.8 as in more acid soil conditions. Applications of NH₄N03 resulting in soil concentrations of ND3-N ranging from 60 to 120 kg/ha and NH₄-N ranging from 90 to 130 kg/ha at pH 4.8 and 5.8 were associated with the most abundant Pt ectomycorrhizal development. Increased N applications increased Pt development at pH 5.8 and 6.8. Calcium equivalent treatments, using CaSD4 at similar Ca concentrations, suggested seedling response was due to soil pH and not Ca concentrations. Forest science. June 1990. v. 36 (2). p. 224-245. Includes references. (NAL

Call No.: DNAL 99.8 F7632).

0945

Survival of Douglas-fir injected with the fumigants chloropicrin, methylisothiocyanate or vorlex.

NOSCA. Thies, W.G. Nelson, E.E. Pullman, Wash. : Washington State University Press. Northwest science. Feb 1987. v. 61 (1). p. 60-64. Includes references. (NAL Call No.: DNAL 470 N81).

0946

Time and materials needed to survey, inject systematic fungicides, and install root-graft barriers for Dutch elm disease management.

Cannon, W.N. Jr. Barger, J.H.; Kostichka, C.J. Broomall, Pa. : The Station. USDA Forest Service Research Paper NE - United States, Northeastern Forest Experiment Station. 1986. (585). 6 p. Includes references. (NAL Call No.: DNAL A99.9 F7622UN).

0947

Trichoderma species from fumigated Douglas-fir roots decayed by Phellinus weirii.

MYCOAE. Nelson, E.E. Goldfarb, B.; Thies, W.G. Bronx, N.Y. : The New York Botanical Garden. Mycologia. May/June 1987. v. 79 (3). p. 370-374. Includes references. (NAL Call No.: DNAL 450 M99).

0948

Use of Metam-sodium and Dazomet fumigants.

McElroy, F.D. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at a Meeting of the Combined Western Forest Nursery Council and Intermountain Nursery Association, August 12-15, 1986, Tumwater, Washington. Dec 1986. (137). p. 139-146. (NAL Call No.: DNAL aSD11.A42).

0949

Weed control with herbicides or fumigation at a forest nursery.

South, D. AL. Auburn, The Station. Highlights of agricultural research. Alabama. Agricultural Experiment Station. Spring 1980. v. 27 (1). p. 14. ill. (NAL Call No.: 100 AL1H).

FORESTRY PROD. - ARTIFICIAL REGENERATION

0950

Effects of soil fumigation and cover crops on potential pathogens, microbial activity, nitrogen availability, and seedling quality in conifer nurseries.

PHYTA. Hansen, E.M. Myrold, D.D.; Hamm, P.B. St. Paul, Minn. : American Phytopathological Society. In three forest tree nurseries of the Pacific Northwest, fall fumigation with chloropicrin or dazomet led to an immediate increase in total microbial respiration and nitrogen availability, but levels were comparable to those in unfumigated plots when tree seedlings were sown in the next spring. Population densities of *Fusarium* spp. and *Pythium* spp. in fumigated plots were reduced dramatically and stayed significantly below those in unfumigated plots throughout the 2-yr crop cycle. Grass or legume cover crops increased pathogen population densities over those in bare, fallow plots before fumigation, and the trend continued throughout the crop cycle in unfumigated plots. At the end of the study, population densities of *Fusarium* in fallow, unfumigated plots were comparable to those in cover-cropped, fumigated plots. Seedling mortality was lower, and surviving seedlings were larger and more uniform on fallow and fumigated plots than on cover-cropped or unfumigated plots. *Phytopathology*. Aug 1990. v. 80 (8). p. 698-704. Includes references. (NAL Call No.: DNAL 464.8 P56).

0951

Effects of soil fumigation on conifer seedling production at the USDA Forest Service nursery, Coeur d'Alene, Idaho /by R.L. James, S. Metzger, C.J. Gilligan.

James, Robert L. Gilligan, Carma J. Missoula, Mont. : U.S. Dept. of Agriculture, Forest Service, Northern Region. 1990. Caption title.~ "May 1990.". 18 p. ; 28 cm. Includes bibliographical references (p. 7-9). (NAL Call No.: DNAL aSD11.U585 no.90-11).

0952

Influence of disease management strategies on the production of white spruce in a forest tree nursery.

FOSCA. Enebak, S.A. Palmer, M.A.; Blanchette, R.A. Bethesda, Md. : Society of American Foresters. In a forest tree nursery dazomet, captan, thiram, captan-thiram combination, or silica sand did not reduce populations of three soilborne fungi. Preemergence mortality was greatest in nontreated plots, (56%) and least in plots treated with dazomet (46%). Nontreated plots had the most post-emergence damping off, (15%) and silica sand the least (3%). *Rhizoctonia solani* (AG-1) was isolated from 52% of damped-off seedlings collected while *Pythium* spp., *Fusarium* spp. and *Cylindrocladium* spp. were recovered from 24%, 23%, and 1% of the seedlings, respectively. Seedling mortality from May 18 to September 23, 1986, ranged from 28% in the dazomet plots to 61% in nontreated

plots. At the end of the first growing season, plots treated with dazomet had significantly more seedlings than any other treatment. The incidence of stunted seedlings was greatest in plots treated with dazomet and least when seed was covered with silica sand. Silica sand or thiram treatments produced seedlings with the greatest total dry weights. *Forest science*. Dec 1989. v. 35 (4). p. 1006-1013. Includes references. (NAL Call No.: DNAL 99.8 F7632).

0953

Methyl bromide fumigation at the Lone Peak State Forest Nursery, Utah.

Grierson, D.G. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 38-39. (NAL Call No.: DNAL aSD11.A42).

0954

Methyl bromide fumigation of containers filled with growing media.

Garren, T.R. Landis, T.D.; Campbell, S.J. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 43-48. 111. Includes references. (NAL Call No.: DNAL aSD11.A42).

0955

Soil fumigation at J. Herbert Stone Nursery.

Scholtes, J.R. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Paper presented at the Intermountain Forest Nursery Association Meeting, August 14-18, 1989, Bismark, North Dakota. Dec 1989. (184). p. 35-37. (NAL Call No.: DNAL aSD11.A42).

0956

Soil fumigation, cover cropping, and organic soil amendments: their effect on soil-borne pathogens and the target seedling.

Hamm, P.B. Hansen, E.M. Fort Collins, Colo. : The Station. General technical report RM - Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. Dec 1990. (200). p. 174-180. Includes references. (NAL Call No.: DNAL aSD11.A42).

0957

Soil fumigation in bareroot tree nurseries.

Landis, T.D. Campbell, S.J. Fort Collins, Colo.
: The Station. General technical report RM -
Rocky Mountain Forest and Range Experiment
Station, U.S. Department of Agriculture, Forest
Service. Paper presented at the Intermountain
Forest Nursery Association Meeting, August
14-18, 1989, Bismark, North Dakota. Dec 1989.
(184). p. 13-28. ill. Includes references. (NAL
Call No.: DNAL aSD11.A42).

0958

**Soil fumigation in southern United States
forest tree nurseries.**

Cordell, C.E. Fort Collins, Colo. : The
Station. General technical report RM - Rocky
Mountain Forest and Range Experiment Station,
U.S. Department of Agriculture, Forest Service.
Paper presented at the Intermountain Forest
Nursery Association Meeting, August 14-18,
1989, Bismark, North Dakota. Dec 1989. (184).
p. 52-57. ill. Includes references. (NAL Call
No.: DNAL aSD11.A42).

FOREST MANAGEMENT

0959

Nursery weed control with herbicides or fumigation--an economic evaluation (Southern pines).
South, D.B. Gjerstad, D.H. Washington, D.C., Society of American Foresters. Southern journal of applied forestry. Feb 1980. v. 4 (1). p. 40-45. ill. 31 ref. (NAL Call No.: SD1.S63).

FOREST PRODUCTS - GENERAL .

0960

Handbook of pest control the behavior, life history, and control of household pests /by Arnold Mallis editorial director, Keith Story production editor, Dan Morelandart director, Charlotte Goerss.

Mallis, Arnold. Cleveland, Ohio : Franzak & Foster Co., c1990 . Abstract: Written for practicing urban pest management professionals particularly pest control operators, this comprehensive reference handbook covers the behavior, biology and control of household pests including vertebrate pests and occasional invaders. Integrated pest management (IPM) methods are emphasized and additional information on nonchemical approaches is provided in the seventh edition. New sections on chemophobia, liability and litigation, pesticide safety and IPM in sensitive environments are included. Chemicals used in structural pest management, fumigation and equipment are discussed. Contains a glossary, index of pesticide common names and examples of registered trade names and numerous illustrations and pictorial keys to aid in identification. 1152 p., 34 p. of plates : ill. (some col.), maps ; 24 cm. Includes bibliographies and indexes. (NAL Call No.: DNAL TX325.M3 1990).

FOREST PRODUCTS - WOOD

0961

Anobiid beetles in structures.

WUEXA. Suomi, D.A. Pullman, Wash. : The Service. Extension bulletin - Washington State University, Cooperative Extension Service. In subseries: Insect Answers. Jan 1991. (1577). 4 p. (NAL Call No.: DNAL 275.29 W27P).

0962

Bound chlorinated residue in chloropicrin-treated Douglas-fir.

WOOFAJ. Goodell, B.S. Krahmer, R.L.; Graham, R.D. Madison : Society of Wood Science and Technology. Wood and fiber science. Jan 1986. v. 18 (1). p. 127-133. ill. Includes references. (NAL Call No.: DNAL TA419.W6).

0963

Control of mold and stain on methyl bromide fumigated red oak sapwood.

FPJJA. Schmidt, E.L. Madison, Wis. : Forest Products Research Society. Forest products journal. Feb 1985. v. 35 (2). p. 61-62. Includes 10 references. (NAL Call No.: DNAL 99.9 F7662J).

0964

Controlling wood deterioration with fumigants: a review.

FPJJA. Morrell, J.J. Corden, M.E. Madison, Wis. : Forest Products Research Society. Forest products journal. Literature review. Oct 1986. v. 36 (10). p. 27-34. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0965

Decomposition of methylisothiocyanate in Douglas-fir heartwood.

FPJJA. Zahora, A.R. Morrell, J.J. Madison, Wis. : Forest Products Research Society. Decomposition of the wood fumigant methylisothiocyanate (MIT) was studied in blocks of Douglas-fir heartwood. Decomposition was influenced by wood moisture content (MC), with decomposition rates estimated at 0.2, 0.9, and 1.6 percent per week of the total bound MIT for wood fumigated at 0, 12, and 60 percent MC, respectively. Dimethylthiourea and 2,4-dimethyl-1,2,4-thiadiazolidine-3,5-dithione, which formed during fumigation, showed toxic activity against the decay fungus *Poria carbonica*. Elemental sulfur was also formed, but showed minimal fungitoxic activity. Some MIT remained in fumigated wood even after extensive aeration under dry conditions. This residual MIT rapidly volatilized at fungitoxic concentrations when wood was wetted and may provide residual protection against fungal invasion. Forest products journal. Oct 1988. v. 38 (10). p. 46-52. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0966

Diffusion and sorption of the fumigant methylisothiocyanate in Douglas-fir wood.

WOOFAJ. Zahora, A.R. Morrell, J.J. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Jan 1989. v. 21 (1). p. 55-66. ill. Includes references. (NAL Call No.: DNAL TA419.W6).

0967

Doane Stewart of Vikane gas (drywood termite) fumigant.

Wurm, R. Midland, Mich., Dow Chemical. Industrial vegetation turf and pest management. 1980. v. 12 (1). p. 22-23. (NAL Call No.: S571.A1I5).

0968

The effect of pH on decomposition of Mylone (dazomet) and tridipam to fungitoxic methylisothiocyanate in wood.

WOOFAJ. Morrell, J.J. Sexton, C.M.; Lebow, S. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Oct 1988. v. 20 (4). p. 422-430. Includes references. (NAL Call No.: DNAL TA419.W6).

0969

Effectiveness of fumigants against marine wood-borers (Sodium N-methyl dithiocarbamate, methylisothiocyanate, trichloronitromethane, *Limnoria tripunctata*).

Heising, G.G. Graham, R.D.; Newbill, M.A. Madison, Wis. : Forest Products Research Society. Forest products journal. June 1984. v. 34 (6). p. 61-64. Includes references. (NAL Call No.: 99.9 F7662J).

0970

Efficacy of various fumigants in the eradication of decay fungi implanted in Douglas-fir timbers.

PHYTAJ. Eslyn, W.E. Highley, T.L. St. Paul, Minn. : American Phytopathological Society. Phytopathology. May 1985. v. 75 (5). p. 588-592. ill. Includes 13 references. (NAL Call No.: DNAL 464.8 P56).

0971

Evaluating potential decay control agents with a small block test.

WOOFAJ. Corden, M.E. Morrell, J.J. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Oct 1988. v. 20 (4). p. 477-486. Includes references. (NAL Call No.: DNAL

TA419.W6).

0972

Evaluation of encapsulated and gelled chloropicrin formulations for use in wood poles.

WO0FAJ. Goodell, B.S. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Jan 1989. v. 21 (1). p. 37-44. ill. Includes references. (NAL Call No.: DNAL TA419.W6).

0973

Field comparison of sulfuryl fluoride susceptibility among three termite species (Isoptera: Kalotermitidae, Rhinotermitidae) during structural fumigation.

JEENAI. Su, N.Y. Scheffrahn, R.H. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1986. v. 79 (4). p. 903-908. ill. Includes references. (NAL Call No.: DNAL 421 J822).

0974

Fumigant control of marine borer attack in Douglas-fir piling.

FPJOA. Newbill, M.A. Morrell, J.J. Madison, Wis. : Forest Products Research Society. To assess the feasibility of using the fumigants chloropicrin, Vorlex, or methylisothiocyanate to enhance piling performance, experimental Douglas-fir pile sections were exposed for 3 years in marine waters at Newport, Oreg., or at Port Hueneme, Calif. Visual and chemical tests indicated that fumigant treatments did not provide long-term protection against marine borer attack when untreated wood was exposed during construction. Forest products journal. May 1991. v. 41 (5). p. 49-52. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0975

Fumigants control decay in timbers.

Washington, D.C. : The Service. Engineering field notes - United States Forest Service, Engineering Staff. Mar/Apr 1988. v. (20). p. 41-42. ill. (NAL Call No.: DNAL aSD388.A1U52).

0976

Interactions between sodium N-methylthiocarbamate and Douglas-fir heartwood.

WO0FAJ. Miller, D.B. Morrell, J.J. Madison, Wis. : The Society. Wood and fiber science : journal of the Society of Wood Science and Technology. Apr 1990. v. 22 (2). p. 135-141. Includes references. (NAL Call No.: DNAL TA419.W6).

0977

Methyl bromide eradication of the oak wilt fungus from red and white oak logs.

FPJOA. MacDonald, W.L. Schmidt, E.L.; Harner, E.J. Madison, Wis. : Forest Products Research Society. Forest products journal. July/Aug 1985. v. 35 (7/8). p. 11-16. ill. Includes 9 references. (NAL Call No.: DNAL 99.9 F7662J).

0978

Methyl bromide treatment of oak wilt infected logs: Laboratory and preliminary field fumigations (Ceratocystis fagacearum).

Schmidt, E.L. Ruetze, M.M.; French, D.W. Madison, Wis., Forest Products Research Society. Forest products journal. Mar 1982. v. 32 (3). p. 46-49. Includes 7 ref. (NAL Call No.: 99.9 F7662J).

0979

Movement and persistence of chloropicrin fumigant in western redcedar poles (Treatment for wood decaying fungi).

Scheffer, T.C. Inwards, R.; Graham, R.D. Madison, Wis., Forest Products Research Society. Forest products journal. May 1982. v. 32 (5). p. 33-36. Includes 3 ref. (NAL Call No.: 99.9 F7662J).

0980

Ovicidal activity of sulfuryl fluoride to anobiid and lyctid beetle eggs of various ages.

JESCEP. Williams, L.H. Sprengel, R.J. Tifton, Ga. : Georgia Entomological Society. Journal of entomological science. July 1990. v. 25 (3). p. 366-375. ill. Includes references. (NAL Call No.: DNAL QL461.G4).

0981

Performance of gelatin-encapsulated methylisothiocyanate in Douglas-fir poles.

FPJOA. Morrell, J.J. Zahora, A.R.; Corden, M.E.; Newbill, M.A. Madison, Wis. : Forest Products Research Society. The ability of gelatin-encapsulated methylisothiocyanate (MITC) to eliminate Basidiomycetes and prevent reinfestation by these fungi was evaluated in Douglas-fir poles treated with pentachlorophenol or chromated copper arsenate. The poles had been in service for 9 to 15 years and contained active Basidiomycete colonies. Fumigant treatment resulted in rapid elimination of decay fungi with nearly complete elimination 2 years after fumigant application. Extra water, added at the time of application to accelerate gelatin breakdown, appeared to provide a slight improvement in fungal control after 1 year, but when sampling was prolonged, this effect was negligible. Gelatin encapsulation provides a highly effective method for safely containing MITC prior to

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application and does not appear to adversely affect fumigant performance. Forest products journal. July/Aug 1990. v. 40 (7/8). p. 37-40. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0982

Reducing internal and external decay of untreated Douglas-fir poles: a field test. FPJDA. Morrell, J.J. Smith, S.M.; Newbill, M.A.; Graham, R.D. Madison, Wis. : Forest Products Research Society. Forest products journal. Apr 1986. v. 36 (4). p. 47-52. Includes 24 references. (NAL Call No.: DNAL 99.9 F7662J).

0983

A slide-hammer for pulling plugs in fumigated transmission poles. Cantara, G.M. Graham, R.D. Madison, Wis. : Forest Products Research Society. Forest products journal. May 1983. v. 33 (5). p. 45. ill. Includes references. (NAL Call No.: 99.9 F7662J).

0984

Using fumigants to control interior decay in waterfront timbers (Vapam, chloropicrin). Highley, T.L. Eslyn, W.E. Madison, Wis., Forest Products Research Society. Forest products journal. Feb 1982. v. 32 (2). p. 32-34. ill. Includes 9 ref. (NAL Call No.: 99.9 F7662J).

0985

Volatile emissions from Douglas-fir heartwood treated with Vapam or methylisothiocyanate. FPJDA. Morrell, J.J. Lebow, S.T. Madison, Wis. : Forest Products Research Society. Fumigants, which play an important role in arresting and preventing decay of wood exposed to the weather, have recently been used to control decay in building timbers. The possibility exists that chemicals could migrate through the wood and be emitted inside buildings, thus posing a health hazard. Emission rates from blocks of Douglas-fir heartwood, treated with Vapam or methylisothiocyanate (MIT), were measured by placing the blocks in tanks under a stable air-flow and then analyzing air samples by gas chromatography at regular intervals. Three sulfur compounds were detected: carbon disulfide, carbonyl sulfide, and MIT. Emissions from wood treated with MIT were generally higher than those from Vapam-treated wood. Although our results indicated that emissions were detectable for at least 1 year after treatment, levels were extremely low and should not be a problem in storage buildings or in factories where air exchange is high. Fumigant treatment of wood used in tightly sealed buildings that are continually inhabited is not recommended. Forest products journal. Feb 1989.

v. 39 (2). p. 41-44. Includes references. (NAL Call No.: DNAL 99.9 F7662J).

0986

Wood damaging pest control category 7A / Judy Bertholf, Steve McKinzie . Bertholf, Judy. McKinzie, Steven. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1986 . Abstract: This study manual for commercial pesticide applicators explains how to identify, recognize damage caused by, and control termites and other wood damaging pests. It includes information on the selection, proper application and safe use of termiticides and fumigants, protective clothing and respiratory devices. It contains a key to insect damage of wood, practice multiple choice study questions, and construction diagrams. Cover title.~ At head of title: Commercial pesticide applicator certification and recertification study manual.~ Earlier ed. written by Dell E. Gates, Lynne C. Thompson, and Vernon McKinzie.". 3i p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.K2G32 1986).

FOREST INJURIES AND PROTECTION

0987

Comparative ozone dose response of gas exchange in a ponderosa pine stand exposed to long-term fumigations.

Coyne, P.I. Bingham, G.E. Pittsburgh, Pa., William G. Hamlin. Journal of the Air Pollution Control Association. Jan 1981. v. 31 (1). p. 38-41. 111. 26 ref. (NAL Call No.: 449.9 AI7).

0988

Effects of ozone and sulfur dioxide on phyllosphere fungi from three tree species.

APMBA. Fenn, M.E. Dunn, P.H.; Durall, D.M. Washington, D.C. : American Society for Microbiology. Short-term effects of ozone (O₃) on phyllosphere fungi were studied by examining fungal populations from leaves of giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchholz) and California black oak (*Quercus kelloggii* Newb.). Chronic effects of both O₃ and sulfur dioxide (SO₂) were studied by isolating fungi from leaves of mature Valencia orange (*Citrus sinensis* L.) trees. In this chronic-exposure experiment, mature orange trees were fumigated in open-top chambers at the University of California, Riverside, for 4 years with filtered air, ambient air plus filtered air (1:1), ambient air, or filtered air plus SO₂ at 9.3 parts per hundred million. Populations of *Alternaria alternata* (Fr.) Keissler and *Cladosporium cladosporioides* (Fres.) de Vries, two of the four most common fungi isolated from orange leaves, were significantly reduced by chronic exposure to ambient air. In the short-term experiments, seedlings of giant sequoia or California black oak were fumigated in open-top chambers in Sequoia National Park for 9 to 11 weeks with filtered air, ambient air, or ambient air plus O₃. These short-term fumigations did not significantly affect the numbers of phyllosphere fungi. Exposure of Valencia orange trees to SO₂ at 9.3 parts per hundred million for 4 years reduced the number of phyllosphere fungi isolated by 75% compared with the number from the filtered-air treatment and reduced the Simpson diversity index value from 3.3 to 2.5. A significant chamber effect was evident since leaves of giant sequoia and California black oak located outside of chambers had more phyllosphere fungi than did seedlings within chambers. Results suggest that chronic exposure to ambient ozone or SO₂ in polluted areas can affect phyllosphere fungal communities, while short-term exposures may not significantly disturb phyllosphere fungi. Applied and environmental microbiology. Feb 1989. v. 55 (2). p. 412-418. Includes references. (NAL Call No.: DNAL 448.3 AP5).

0989

Effects of ozone or sulfur dioxide on pitch pine seedlings.

JEVQAA. Scherzer, A.J. McClenahan, J.R. Madison, Wis. : American Society of Agronomy. Pitch pine seedlings (*Pinus rigida* Mill.) were fumigated with O₃ or SO₂ to determine their effects on growth and symptom expression.

Seedlings fumigated twice with 0.20 microliter O₃L-1 for 4 hr at age 14 and 22 wk had significantly greater shoot weight than those fumigated with 0.30 microliter O₃L-01; 0, 0.08, 0.10, and 0.15 microliter L-1 were intermediate and not significantly different. Root starch content tended to decrease with increasing O₃ with control seedlings being significantly higher than the 0.15, 0.20, and 0.30 microliter O₃L-1 treatments. Root starch of seedlings treated with 0.20, 0.50, 0.60, 0.70, and 0.90 microliter SO₂L-1 was significantly lower than the controls. Seedlings from six families fumigated for 5 wk starting at age 6 wk differed in direction and degree of growth response when exposed to 0.08 and 0.30 microliter O₃L-1. Significant differences existed among families for needle weight, shoot weight, and total weight. No differences were found among O₃ treatments within a family, but patterns suggest some pitch pine individuals may be sensitive to low O₃ while others are stimulated. Visible injury consisted of light chlorotic mottle on oldest needles. Discriminant function analysis indicated that growth responses were indistinguishable among families receiving no treatment; however, treated seedlings could be classified based on various height measurements and/or shoot weight. Differences in visible injury were apparent among families of seedlings treated with 0.40 microliter O₃L-1, indicating some pitch pine families are more sensitive to O₃ than others. Journal of environmental quality. Jan/Mar 1989. v. 18 (1). p. 57-61. Includes references. (NAL Call No.: DNAL QH540.J6).

0990

Growth response of green and white ash seedlings to ozone, sulfur dioxide, and simulated acid rain.

FOSCA. Chappelka, A.H. Chevone, B.I.; Burk, T.E. Bethesda, Md. : Society of American Foresters. Nine-week-old green (*Fraxinus pennsylvanica* Marsh.) and white (*F. americana* L.) ash were exposed to O₃ and/or SO₂ (control, 0.10 ppm O₃, 0.08 ppm SO₂, or 0.10 ppm O₃ + 0.08 ppm SO₂) for 4 h d⁻¹, 5 d wk⁻¹ in combination with simulated rain (pH 3.0, 4.3 or 5.6, 1 h d⁻¹, 2 d wk⁻¹ at 0.75 cm h⁻¹) for 6 weeks, under controlled laboratory conditions, with rain applied either just before or after fumigation. Across all rain treatments, white ash biomass was suppressed by the application of O₃ and cumulative shoot elongation of green ash exposed to O₃ and/or SO₂ was less than controls. The combination of O₃ + SO₂ did not affect the growth of either species more than the pollutants applied alone. Leaf area ratio (LAR) and root to shoot ratio (RSR) exhibited quadratic responses to rain pH in green ash, across all pollutant treatments. Significant pollutant X pH interactions occurred in leaf weight ratio (LWR) in green ash and LAR and RSR in white ash. Significant linear increases in LAR and decreases in RSR, with decreasing pH, were observed for O₃ and SO₃-treated white ash. These findings are discussed relative to implications of the effects of gaseous pollutants in combination with acid rain on green and white ash growth. FOR. SCI.

(FOREST INJURIES AND PROTECTION)

34(4):1016-1029. Forest science. Dec 1988. v.
34 (4). p. 1016-1029. Includes references. (NAL
Call No.: DNAL 99.8 F7632).

0991

Histological comparisons of white pine (*Pinus strobus*) needles fumigated with ozone and sulfur dioxide singly and in mixtures.

Boone, G.C. Harrisburg, Pa., The Academy.
Proceedings of the Pennsylvania Academy of
Science. 1980. v. 54 (2). p. 128-130. ill. 11
ref. (NAL Call No.: 500 P383).

ENTOMOLOGY RELATED

0992

Grain fumigation and seed treatment training manual. -. Helena Montana Dept. of Agriculture 1981. Cover title ~Pesticide Applicator Training collection. i, 35, (1) p. : ill. ; 28 cm. (NAL Call No.: SB950.2.M9G7).

0993

Safe practices in the use and handling of Fumitoxin fumigants. -. Alhambra, Calif. Pestcon Systems 1982. Cover title ~At head of title: Training booklet ~Pesticide Applicator Training collection. 8 p. : ill. ; 28 cm. (NAL Call No.: SB952.5.S3).

0994

Safe practices in the use and handling of Fumitoxin fumigants / Pestcon Systems, Inc. Des Moines, IA : Pestcon Systems, Inc., 1988? . Abstract: This ready reference manual produced by PESTCON SYSTEMS INC. compiles FUMITOXIN fumigant labels and its Material Safety Data Sheet in individual clear plastic covers. It emphasizes safe handling and application practices in the use of this restricted pesticide for stored, processed, manufactured product pest control. Materials are various labels for Fumitoxin. 1 v. (unpaged) : ill. ; 28 cm. (NAL Call No.: DNAL SB952.5.S32).

0995

Stored grain insect control in Oklahoma. Coppock, S. Stillwater, Okla. : The Service. OSU extension facts - Cooperative Extension Service, Oklahoma State University. June 1991. (7180,rev.). 8 p. (NAL Call No.: DNAL S544.3.O505).

0996

Studies with gaseous mutagens in Drosophila melanogaster. EVSRB. Krammers, P.G.N. Bissumbhar, B.; Mout, H.C.A. New York : Plenum Press. Environmental science research. Paper presented at the "Symposium on Short-Term Genetic Bioassays in the Evaluation of Complex Environmental Mixtures," 1984, Chapel Hill, North Carolina. 1985. v. 32. p. 65-73. ill. Includes references. (NAL Call No.: DNAL TD172.E55).

0997

Wood damaging pest control category 7A / Judy Bertholf, Steve McKinzie . Bertholf, Judy. McKinzie, Steven. Manhattan, Kan. : Cooperative Extension Service, Kansas State University, 1986 . Abstract: This study manual for commercial pesticide applicators explains how to identify, recognize damage caused by, and control termites and other wood damaging pests. It includes information on the selection, proper application and safe use of termiticides and fumigants, protective clothing and respiratory devices. It contains a key to insect damage of wood, practice multiple choice study questions, and construction diagrams. Cover title.~ At head of title: Commercial pesticide applicator certification and recertification study manual.~ Earlier ed. written by Dell E. Gates, Lynne C. Thompson, and Vernon McKinzie.". 31 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.K2G32 1986).

APICULTURE RELATED

0998

Control of Varroa jacobsoni and Tropilaelaps clareae mites using Mavrik in Apis mellifera colonies under subtropical and tropical climates.

ABJOA. Lubinevski, Y. Stern, Y.; Slabezki, Y.; Lensky, Y.; Ben-Yossef, H.; Gerson, U.

Hamilton, Ill. : Dadant & Sons. American bee journal. Jan 1988. v. 128 (1). p. 48-52.

Includes references. (NAL Call No.: DNAL 424.8 AM3).

0999

Good news--a possible easy cure for chalkbrood (Ascophaera apis, honeybee fungus, acetic acid fumigation, benomy).

Thurber, P.F. Hamilton, Ill. : Dadant & Sons. The American bee journal. Sept 1984. v. 124 (9). p. 658-659. Includes 5 references. (NAL

Call No.: 424.8 AM3).

ANIMAL REPRODUCTION

1000

Stored grain insect control in Oklahoma.

Coppock, S. Stillwater, Okla. : The Service.
OSU extension facts - Cooperative Extension
Service, Oklahoma State University. June 1991.
(7180,rev.). 8 p. (NAL Call No.: DNAL
S544.3.0505).

ANIMAL ECOLOGY

1001

Managing woodchuck problems in Kentucky.
Barnes, T.G. Lexington, Ky. : The Service. FOR
- Kentucky University, Cooperative Extension
Service. Mar 1991. (44). 3 p. (NAL Call No.:
DNAL SD436.K4A2).

ANIMAL NUTRITION

1002

Qualitative screening of creosote in rumen contents and fumigants in grains (Cattle grazed in a pasture adjacent to a plant that treated railroad ties).

Reynolds, J.D.PAMDD. Stedelin, J.R. Madison :
The Association. Proceedings of ... annual
meeting - American Association of Veterinary
Laboratory Diagnosticians. 1982. 1982. (25th).
p. 57-66. Includes references. (NAL Call No.:
SF771.A53A).

VETERINARY PHARMACOLOGY, TOXICOLOGY AND IMMUNE THERAPEUTIC AGENTS

1003

Determination of acute toxic effects in mice following exposure to methyl bromide.

JTEHD6. Alexeeff, G.V. Kilgore, W.W.; Munoz, P.; Watt, D. Washington, D.C. : Hemisphere Publishing. Journal of toxicology and environmental health. 1985. v. 15 (1). p. 109-123. ill. Includes references. (NAL Call No.: DNAL RA565.A1J6).

1004

In vitro methylation of DNA by the fumigant methyl bromide.

JPFCD2. Starratt, A.N. Bond, E.J. New York, N.Y. : Marcel Dekker. Journal of environmental science and health : Part B : Pesticides, food contaminants, and agricultural wastes. 1988. v. 23 (5). p. 513-525. Includes references. (NAL Call No.: DNAL TD172.J61).

1005

Poisons and toxins.

Peckham, M.C. Ames, Iowa : Iowa State University Press, 1984. Diseases of poultry / edited by M.S. Hofstad ... et al. . p. 783-818. ill. Includes references. (NAL Call No.: DNAL SF995.B5 1984).

PESTS OF ANIMALS – GENERAL AND MISC.

1006

Development of a simple two-ingredient pyrotechnic fumigant (for burrowing rodent and predator control).

Savarie, P.J. Tigner, J.R.; Elias, D.J.; Hayes, D.J. Davis, Calif., University of California. Proceedings ... Vertebrate Pest Conference. 1980. 1980. (9th). p. 215-221. 14 ref. (NAL Call No.: SB950.A1V4).

1007

Pesticide application and safety training study guide agricultural-livestock pests / compiled and edited by Metro-Pest Management Consultants, Inc. .

Denver, Colo. : Colorado Dept. of Agriculture, Division of Plant Industry, 1980 . Abstract: This Colorado study guide/manual contains the educational information needed by the commercial pesticide applicator to pass the written state certification examination in outdoor vertebrate pest control. The study guide focuses on vertebrates but excludes rat and mice. Control strategies developed for each pest include habitat manipulation, behavioral manipulation, and population reduction. The common pests discussed include bats, birds, moles, gophers, skunks, rabbits, squirrels, porcupines, prairie dogs, coyote, raccoons, deer and snakes. Indexed toxicants (avicides and rodenticides) and fumigants--their use, history, characteristics, pharmacology, toxicity, and first aid treatment--are discussed. Colorado State Extension Service Offices' addresses and the Rocky Mountain Poison Control Center toll free telephone number are listed. Cover title.~
Caption title: Study guide for livestock pests. 37. 3 p. : ill. ; 28 cm. (NAL Call No.: DNAL SF810.A3P47).

PEST OF ANIMALS - INSECTS

1008

Control of Varroa jacobsoni and Tropilaelaps clareae mites using Mavrik in Apis mellifera colonies under subtropical and tropical climates.

ABJ0A. Lubinevski, Y. Stern, Y.; Slabezki, Y.; Lensky, Y.; Ben-Yossef, H.; Gerson, U. Hamilton, Ill. : Dadant & Sons. American bee journal. Jan 1988. v. 128 (1). p. 48-52. Includes references. (NAL Call No.: DNAL 424.8 AM3).

title ~At head of title: Commercial pesticide applicator certification and recertification study manual ~S-15 ~"July 1980.". 58 p. : ill. ; 28 cm. (NAL Call No.: SB955.H4).

1009

An innovative thermo-fumigation technique for control of red imported fire ants (Hymenoptera: Formicidae).

Thorvilson, H.G. Phillips, S.A. Jr.; Sorensen, A.A. Clemson, S.C. : South Carolina Entomological Society. Journal of agricultural entomology. Jan 1989. v. 6 (1). p. 31-36. ill. Includes references. (NAL Call No.: DNAL SB599.J69).

1010

Pesticide application and safety training study guide agricultural-livestock pests / compiled and edited by Metro-Pest Management Consultants, Inc. .

Denver, Colo. : Colorado Dept. of Agriculture, Division of Plant Industry, 1980 . Abstract: This Colorado study guide/manual contains the educational information needed by the commercial pesticide applicator to pass the written state certification examination in outdoor vertebrate pest control. The study guide focuses on vertebrates but excludes rat and mice. Control strategies developed for each pest include habitat manipulation, behavioral manipulation, and population reduction. The common pests discussed include bats, birds, moles, gophers, skunks, rabbits, squirrels, porcupines, prairie dogs, coyote, racoons, deer and snakes. Indexed toxicants (avicides and rodenticides) and fumigants--their use, history, characteristics, pharmacology, toxicity, and first aid treatment--are discussed. Colorado State Extension Service Offices' addresses and the Rocky Mountain Poison Control Center toll free telephone number are listed. Cover title.~ Caption title: Study guide for livestock pests. 37, 3 p. : ill. ; 28 cm. (NAL Call No.: DNAL SF810.A3P47).

1011

Structural pest control : category 7E / (F. Robert Henderson, Lynne C. Thompson, Vernon McKinzie). -.

Henderson, F. Robert. Thompson, Lynne C.; McKinzie, Vernon.& Commercial pesticide applicator certification and recertification study manual. Manhattan Cooperative Extension Service, Kansas State University 1980. Pesticide Applicator Training Collection ~Cover

ANIMAL DISORDERS – PHYSICAL TRAUMA

1012

Qualitative screening of creosote in rumen contents and fumigants in grains (Cattle grazed in a pasture adjacent to a plant that treated railroad ties).

Reynolds, J.D.PAMDD. Stedelin, J.R. Madison : The Association. Proceedings of ... annual meeting - American Association of Veterinary Laboratory Diagnosticians. 1982. 1982. (25th). p. 57-66. Includes references. (NAL Call No.: SF771.A53A).

1013

Toxicology of carbon disulfide: a review (Used as a fumigant).

Coppock, R.W. Buck, W.B.; Mabee, R.L. Manhattan, Kan., American College of Veterinary Toxicologists. Veterinary and human toxicology. Oct 1981. Literature review. v. 23 (5). p. 331-336. 55 ref. (NAL Call No.: SF601.A47).

PROTECTION OF ANIMAL PRODUCTS - GENERAL AND MISC.

1014

Food processing pest management /edited by James Cink and Phillip Harein.

Cink, James.; Harein, Phillip. St. Paul, MN : Minnesota Extension Service, University of Minnesota , 1989. Abstract: This guide is for the non-commercial pesticide applicator who seeks Minnesota state certification in Food Processing Pest Control, In-plant application of "restricted-use" pesticides, including fumigants and In-plant application of fumigants only. The manual focuses on chemical and nonchemical prevention, control, removal and eradication of: insect; animal and bird; mold and fungus; bacterial; and weed pests. Formulations for insecticides, acaricides, herbicides, fungicides, bactericides, nematocides, rodenticides, avicides and fumigants are given. Safe use, pesticide label warnings and toxicity levels and dangers are stressed. Pesticide application and equipment are covered. Includes leaflets and pamphlets. 1 v. (various pagings) : ill. ; 28 cm. (NAL Call No.: DNAL SB937.F6).

structural pest management, fumigation and equipment are discussed. Contains a glossary, index of pesticide common names and examples of registered trade names and numerous illustrations and pictorial keys to aid in identification. 1152 p., 34 p. of plates : ill. (some col.), maps ; 24 cm. Includes bibliographies and indexes. (NAL Call No.: DNAL TX325.M3 1990).

1015

Fumigation of trailers, containers and railcarsNational Pest Control Association.

Dunn Loring, Va. : NPCA, c1987. The basics of forty foot trailer, specialized container, and railcar (boxcar and hopper car) fumigation are covered in this National Pest Control Association audio-visual training program for service technicians. The uses of sulfuryl fluoride, methyl bromide and phosphine, the three fumigants registered for fumigating commodities in these vessels, are described. The eight steps in the fumigation process are discussed in detail. This training package includes a video, practical training tips, program presentation recommendations, a pretest and a post test (with answers), a program script, and a supplemental information list. VHS. 1 videocassette (17 min.) : sd., col. ; 1/2 in. + 1 teaching guide/script (15 p.). (NAL Call No.: DNAL Videocassette no.1050).

1016

Handbook of pest control the behavior, life history, and control of household pests /by Arnold Mallis editorial director, Keith Story production editor, Dan Morelandart director, Charlotte Goerss.

Mallis, Arnold. Cleveland, Ohio : Franzak & Foster Co., c1990 . Abstract: Written for practicing urban pest management professionals particularly pest control operators, this comprehensive reference handbook covers the behavior, biology and control of household pests including vertebrate pests and occasional invaders. Integrated pest management (IPM) methods are emphasized and additional information on nonchemical approaches is provided in the seventh edition. New sections on chemophobia, liability and litigation, pesticide safety and IPM in sensitive environments are included. Chemicals used in

PROTECTION OF ANIMAL PRODUCTS - INSECTS

1017

Efficacy of sulfuryl fluoride against four beetle pests of museums (Coleoptera: Dermestidae, Anobiidae).

JEENAI. Su, N.Y. Scheffrahn, R.H. Lanham, Md. : Entomological Society of America. The efficacy of sulfuryl fluoride against adults, larvae, and eggs of four coleopterans--furniture carpet beetle, *Anthrenus flavipes* Leconte; black carpet beetle, *Attagenus megatoma* (F.); cigarette beetle, *Lasioderma serricornis* (F.); and hide beetle, *Dermestes maculatus* (De Geer)--was determined. Adults were generally more susceptible to sulfuryl fluoride than larvae. Eggs were the most tolerant stage; T-30 times more fumigant was required compared with rates required to kill adults and larvae. Our results indicated that the cumulative dose required to kill 99% of *A. flavipes* larvae was 156 mg.h/liter. This rate exceeds the current recommended rate (approximately 72 mg.h/liter) of sulfuryl fluoride for control of carpet beetles. Eggs of cigarette beetles exposed to higher concentrations of sulfuryl fluoride developed at a slower rate. For multiple fumigation intended to control adults and larvae rather than eggs, the delayed embryonic development of eggs exposed to the sublethal dose of sulfuryl fluoride should be considered in determining the timing between fumigations. *Journal of economic entomology*. June 1990. v. 83 (3). p. 879-882. Includes references. (NAL Call No.: DNAL 421 J822).

practicing urban pest management professionals particularly pest control operators, this comprehensive reference handbook covers the behavior, biology and control of household pests including vertebrate pests and occasional invaders. Integrated pest management (IPM) methods are emphasized and additional information on nonchemical approaches is provided in the seventh edition. New sections on chemophobia, liability and litigation, pesticide safety and IPM in sensitive environments are included. Chemicals used in structural pest management, fumigation and equipment are discussed. Contains a glossary, index of pesticide common names and examples of registered trade names and numerous illustrations and pictorial keys to aid in identification. 1152 p., 34 p. of plates : ill. (some col.), maps ; 24 cm. Includes bibliographies and indexes. (NAL Call No.: DNAL TX325.M3 1990).

1018

Food processing pest management /edited by James Cink and Phillip Harein.

Cink, James.; Harein, Phillip. St. Paul, MN : Minnesota Extension Service, University of Minnesota, 1989. Abstract: This guide is for the non-commercial pesticide applicator who seeks Minnesota state certification in Food Processing Pest Control, In-plant application of "restricted-use" pesticides, including fumigants and In-plant application of fumigants only. The manual focuses on chemical and nonchemical prevention, control, removal and eradication of: insect; animal and bird; mold and fungus; bacterial; and weed pests. Formulations for insecticides, acaricides, herbicides, fungicides, bactericides, nematocides, rodenticides, avicides and fumigants are given. Safe use, pesticide label warnings and toxicity levels and dangers are stressed. Pesticide application and equipment are covered. Includes leaflets and pamphlets. 1 v. (various pagings) : ill. ; 28 cm. (NAL Call No.: DNAL SB937.F6).

1019

Handbook of pest control the behavior, life history, and control of household pests /by Arnold Mallis editorial director, Keith Story production editor, Dan Morelandart director, Charlotte Goerss.

Mallis, Arnold. Cleveland, Ohio : Franzak & Foster Co., c1990. Abstract: Written for

1020

Response of photosynthesis and cellular antioxidants to ozone in Populus leaves.

PLPHA. Gupta, A.S. Alscher, R.G.; McCune, D. Rockville, Md. : American Society of Plant Physiologists. Atmospheric ozone causes formation of various highly reactive intermediates (e.g. peroxy and superoxide radicals, H_2O_2 etc.) in plant tissues. A plant's productivity in environments with ozone may be related to its ability to scavenge the free radicals formed. The effects of ozone on photosynthesis and some free radical scavengers were measured in the fifth emergent leaf of poplars. Clonal poplars (*Populus deltoides* X *Populus cv caudina*) were fumigated with 180 parts per billion ozone for 3 hours. Photosynthesis was measured before, during, and after fumigation. During the first 90 minutes of ozone exposure, photosynthetic rates were unaffected but glutathione levels and superoxide dismutase activity increased. After 90 minutes of ozone exposure, photosynthetic rates began to decline while glutathione and superoxide dismutase continued to increase. Total glutathione (reduced plus oxidized) increased in fumigated leaves throughout the exposure period. The ratio of GSH/GSSG also decreased from 12.8 to 1.2 in ozone exposed trees. Superoxide dismutase levels increased twofold in fumigated plants. After 4 hours of ozone exposure, the photosynthetic rate was approximately half that of controls while glutathione levels and superoxide dismutase activity remained above that of the controls. The elevated antioxidant levels were maintained 21 hours after ozone exposure while photosynthetic rates recovered to about 75% of that of controls. Electron transport and NADPH levels remained unaffected by the treatment. Hence, elevated antioxidant metabolism may protect the photosynthetic apparatus during exposure to ozone. Plant physiology. June 1991. v. 96 (2). p. 650-655. Includes references. (NAL Call No.: DNAL 450 P692).

NONFOOD AND NONFEED

1021

**Fungicides, nematicides, and soil fumigants
(Glossary of chemicals).**

Boone, D.M. Grau, C.R.; Stevenson, W.R.; Worf, G.L. Madison : The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. 1983. 1983. (A2336). 4 p. (NAL Call No.: S544.3.W6W53).

1022

Phytotoxic reaction of Hawaiian cut flowers and foliage to hydrogen cyanide fumigation.

HJHSA. Hansen, J.D. Chan, H.T. Jr.; Hara, A.H.; Tenbrink, V.L. Alexandria, Va. : American Society for Horticultural Science. HortScience. Jan 1991. v. 26 (1). p. 53-56. Includes references. (NAL Call No.: DNAL SB1.H6).

AGRICULTURAL ENGINEERING

1023

Field determination of fumigant concentrations.

Dunn Loring, VA : National Pest Control Association, 1985 . Abstract: This technical release covers devices including leak detectors, analyzers, portable photoionization gas chromatograph and color indicator tapes for field determination of fumigant concentrations. Caption title.~ "Developed by the 1983-84 Fumigation Committee."~ "2/14/85."~ "ESPC 073052.". 1 v. (unpaged) : ill. ; 28 cm. (NAL Call No.: DNAL SB955.F5).

1024

Survey results on plastic mulch use in the United States.

Schales, F.D. Peoria, Ill. : National Agricultural Plastics Association. Proceedings of the ... National Agricultural Plastics Congress. 1989. (21st). p. 95-101. Includes references. (NAL Call No.: DNAL 309.9 N216).

STRUCTURES AND STRUCTURAL EQUIPMENT

1025

On-farm grain storage facilities and management practices in Kentucky.

Barney, R.J. Legg, D.E.; Sedlacek, J.D. Lanham, Md. : The Society. Bulletin of the Entomological Society of America. Winter 1989. v. 35 (4). p. 26-33. Includes references. (NAL Call No.: DNAL 423.9 EN8).

CONSERVATION AND USE OF ENERGY

1026

Assessing alternative methods of pest control in raisin storage (Methyl bromide, phosphine, low-oxygen atmospheres and nitrogen, includes energy requirements).

Gardner, P.D. Soderstrom, E.L.; Baritelle, J.L.; de Lozano, K.N. Berkeley : The Service. Bulletin - California University. Berkeley. Cooperative Extension Service. Nov 1982. Nov 1982. (1906). 19 p. ill. Includes references. (NAL Call No.: S39.A2C3).

WATER RESOURCES AND MANAGEMENT

1027

Microbial degradation of 1,2-dibromoethane in shallow aquifer materials.

JEVQAA. Pignatello, J.J. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1987. v. 16 (4). p. 307-312. Includes references. (NAL Call No.: DNAL QH540.J6).

DRAINAGE AND IRRIGATION

1028

Agricultural plastic uses in California.
Hall, B.J. Peoria, Ill. : National Agricultural
Plastics Association. Proceedings of the ...
National Agricultural Plastics Congress. 1983.
(17th). p. 5-11. (NAL Call No.: DNAL 309.9
N216).

1029

**Control of Meloidogyne chitwoodi in
commercially grown Russet Burbank potatoes.**
PLDRA. Pinkerton, J.N. Santo, G.S.; Ponti,
R.P.; Wilson, J.I. St. Paul, Minn. : American
Phytopathological Society. Plant disease. Sept
1986. v. 70 (9). p. 860-863. Includes 16
references. (NAL Call No.: DNAL 1.9 P69P).

1030

**Efficacy of metam sodium applied via drip
irrigation on tomato.**
Overman, A.J. Csizinszky, A.A.; Jones, J.P.;
Stanley, C.D. S.l. : The Society. Proceedings
- Soil and Crop Science Society of Florida.
1987. v. 46. p. 4-7. Includes references. (NAL
Call No.: DNAL 56.9 S032).

1031

**Post-fumigation irrigation for control of
root-knot nematodes with Telone II soil
fumigant (Meloidogyne incognita).**
Youngson, C.R. Midland, Mich., Agricultural
Products Dept., Dow Chemical Co. Down to earth.
Jan 1982. v. 38 (1). p. 28-36. ill. Includes 7
ref. (NAL Call No.: 381 D75).

1032

Soil fumigation by chemigation with metham.
Adams, P.B. St. Paul, Minn. : APS Press, c1986.
Methods for evaluating pesticides for control
of plant pathogens / edited by Kenneth D.
Hickey ; prepared jointly by the American
Phytopathological Society and the Society of
Nematologists. p. 270-272. ill. Includes
references. (NAL Call No.: DNAL SB960.M47
1986).

1033

**Vapam injection in irrigation water for soil
fumigation.**
Farwell, B.J. College Park : Maryland State
Horticultural Society. Maryland fruit grower.
1983. 1983. (suppl.). p. 97-100. (NAL Call No.:
80 M36).

FOOD SCIENCE, FIELD CROP

1034

Grain fumigation : a multifaceted issue needing coordinated attention : report to the Interagency Regulatory Liaison Group / by the U.S. General Accounting Office. -.

United States ~ General Accounting Office. (Washington, D.C.) U.S. General Accounting Office ; for sale by Supt. of Docs. 1981. Cover title ~September 10, 1981 ~CED-81-152 ~B-204571--prelim. p. 2, iii, 17 p. ; 28 cm. (NAL Call No.: SB955.U5).

1035

In-transit fumigation of truck-ship containers with hydrogen phosphide--a feasibility study (Insect control, stored product pests, cereals).

Jay, E. Davis, R.; Zehner, J.M. New Orleans : The Region. Advances in agricultural technology. AAT-S - United States, Dept. of Agriculture, Agricultural Research Service, Southern Region. Apr 1983. Apr 1983. (28). 13 p. Includes references. (NAL Call No.: aS21.A75U7).

FOOD SCIENCE, HORTICULTURAL CROP

1036

Methyl bromide quarantine treatment for codling moth (Lepidoptera: Tortricidae) in unshelled walnuts.

JEENAI, Hartsell, P.L. Vail, P.V.; Tebbets, J.S.; Nelson, H.D. Lanham, Md. : Entomological Society of America. Unshelled walnuts were artificially infested with diapausing fifth-instar codling moth, *Cydia pomonella* (L.), and fumigated with 56 g/m³ methyl bromide for 4 h at 15.6 degrees C under a reduced pressure of 100 mm Hg. When 34,959 were treated, 1 larva survived, indicating a survival rate of 2.91 larvae/100,000 treated. The upper 95% CL for this survival rate was 13.8 larvae/100,000 treated. When larval survival rates of methyl bromide fumigation tests of a normally applied domestic treatment were combined with survival rates from quarantine vacuum fumigation tests, the 95% CL survival rates were less than or equal to 0.4 larva/100,000 treated. No significant differences were found in mortality of larvae among the four walnut cultivars tested, nor was variation in the size of walnuts of each cultivar a significant factor. Because whole walnuts sorbed 79.6% of the methyl bromide applied, a relatively high rate of methyl bromide was required to obtain an efficacious treatment. The treatment was accepted by the Japanese Ministry of Agriculture, Forestry and Fisheries in 1986. Journal of economic entomology. Aug 1991. v. 84 (4). p. 1289-1293. Includes references. (NAL Call No.: DNAL 421 J822).

FOOD PROCESSING

1037

Apply pesticides correctly a guide for commercial applicators : food processing pest control / editors, Mary Ann Wamsley and Donna M. Vermeire .

Wamsley, Mary Ann.; Vermeire, Donna M.
Knoxville, Tenn.? : University of Tennessee, Agricultural Extension Service in cooperation with U.S. Environmental Protection Agency, 1988? . Abstract: Applicants for Food Processing Pest Control certification in the state of Tennessee will find the basic information necessary to meet the specific requirements and standards in the food and feed industries in this manual. The types of pests and methods of control are surveyed. Advantages and limitations of aerosol, liquid, dust, granule, bait, fumigants and vapors are highlighted. Cover title.~ "EC 1011.". 12 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB937.A6).

FOOD PROCESSING, HORTICULTURAL CROP

1038

**Sulfur dioxide fumigation of table grapes:
relative sorption of SO₂ by fruit and packages,
SO₂ residues, decay, and bleaching.**

AJEVA. Harvey, J.M. Harris, C.M.; Hanke, T.A.;
Hartsell, P.L. Davis, Calif. : American Society
of Enologists. American journal of enology and
viticulture. 1988. v. 39 (2). p. 132-136.

Includes references. (NAL Call No.: DNAL 390.9
AM33).

FOOD STORAGE

1039

Food processing pest management /edited by James Cink and Phillip Harein.

Cink, James.; Harein, Phillip. St. Paul, MN : Minnesota Extension Service, University of Minnesota , 1989. Abstract: This guide is for the non-commercial pesticide applicator who seeks Minnesota state certification in Food Processing Pest Control. In-plant application of "restricted-use" pesticides, including fumigants and In-plant application of fumigants only. The manual focuses on chemical and nonchemical prevention, control, removal and eradication of: insect; animal and bird; mold and fungus; bacterial; and weed pests. Formulations for insecticides, acaricides, herbicides, fungicides, bactericides, nematocides, rodenticides, avicides and fumigants are given. Safe use, pesticide label warnings and toxicity levels and dangers are stressed. Pesticide application and equipment are covered. Includes leaflets and pamphlets. 1 v. (various pagings) : ill. ; 28 cm. (NAL Call No.: DNAL SB937.F6).

FOOD STORAGE, FIELD CROP

1040

Grain fumigation & seed treatment training manual.

Helena, Mont. : Montana Dept. of Agriculture, 1987 . Abstract: This manual, designed as a study guide for commercial applicators involved in seed treatment and fumigation of stored grain, can be used to prepare for the seed treatment test. It presents information on the identification, management and chemical control of stored grain pests, recognition of important seed pathogens, seed treatments, application equipment, and safety concerns. Cover title.~ "January 1987.". ii, 41 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.M9G72).

1041

Stored grain insect control / author, Harold R. Willson .

Willson, Harold R. Columbus, Ohio? : Ohio Cooperative Extension Service, Ohio State University, 1988? . Abstract: Basic steps of a grain pest management program including sanitation and chemical treatments of the empty storage facility, application of grain protectants, grain monitoring and management, and corrective pest control procedures, particularly solid formulations of aluminum phosphide fumigant and the gas fumigant methyl bromide are discussed. Descriptions and illustrations of stored grain pests, equations for grain storage calculations and a poison information centers list are provided. Cover title.~ "1/88-2M J.51355"--P. 2 .~ "Agdex 400/623.". 15 p. : ill. ; 28 cm. (NAL Call No.: DNAL 275.29 OH32 no.153).

1042

Stored grain pest management.

MUCBA. Ruppel, R.F. East Lansing, Mich. : The Service. Extension bulletin E - Cooperative Extension Service, Michigan State University. 1991? . (2036). 8 p. (NAL Call No.: DNAL 275.29 M58B).

FOOD STORAGE, HORTICULTURAL CROP

1043

Assessing alternative methods of pest control in raisin storage (Methyl bromide, phosphine, low-oxygen atmospheres and nitrogen, includes energy requirements).

Gardner, P.D. Soderstrom, E.L.; Baritelle, J.L.; de Lozano, K.N. Berkeley : The Service. Bulletin - California University. Berkeley. Cooperative Extension Service. Nov 1982. Nov 1982. (1906). 19 p. ill. Includes references. (NAL Call No.: S39.A2C3).

1044

Commodity treatments: responses of tomatoes and green bell peppers to fumigation with methyl bromide or ethylene dibromide (Chemical control of Mediterranean fruit fly, *Ceratitis capitata*, storage decay).

Lipton, W.J. Tebbets, J.S.; Spitler, G.H.; Hartsell, P.L. Washington, D.C., The Department. Marketing research report - U.S. Department of Agriculture. June 1982. June 1982. (1125). 8 p. 17 ref. (NAL Call No.: 1 AG84MR).

1045

Status of efforts to meet Japanese import quarantine requirements for apples.

WSEPA. Moffitt, H. Pullman, Wash. : The Society. Proceedings of the Washington State Entomological Society. Meeting held on April 23 and September 17, 1988, Yakima, Washington. 1988. (50). p. 863-864. (NAL Call No.: DNAL QL461.W3).

1046

Symptoms of acetaldehyde injury on head lettuce (Fumigation, *Myzus persicae*).

Stewart, J.K. AR-W. Aharoni, Y.; Hartsell, P.L.; Young, D.K. Alexandria, Va., American Society for Horticultural Science. HortScience. Apr 1980. v. 15 (2). p. 148-149. ill. 3 ref. (NAL Call No.: SB1.H6).

1047

Tolerance of Florida 'Marsh' grapefruit to methyl bromide fumigation and cold storage combination treatments effective against the Caribbean fruit fly (*Anastrepha suspensa*).

Benschoter, C.A. S.I., The Society. Proceedings of the ... annual meeting of the Florida State Horticultural Society. 1981 (pub. 1982). v. 94. p. 301-303. Includes 4 ref. (NAL Call No.: 81 F66).

MICROBIOLOGY, HORTICULTURAL CROP

1048 1049

Role of glutathione in reducing residues of methyl bromide in fumigated commodities. Role of glutathione in reducing residues of methyl bromide in fumigated commodities.

PCBPB. PCBPB. Starratt, A.N. Starratt, A.N. Bond, E.J. Bond, E.J. Duluth, Minn. : Academic Press. Duluth, Minn. : Academic Press.

Pesticide biochemistry and physiology.

Pesticide biochemistry and physiology. Oct

1990. v. 38 (2). Oct 1990. v. 38 (2). p.

178-185. p. 178-185. Includes references.

Includes references. (NAL Call No.: DNAL SB951.P49).(NAL Call No.: DNAL SB951.P49).

FOOD CONTAMINATION AND TOXICOLOGY

1050

Fluoride residues in frozen foods fumigated with sulfur dioxide.

BECTA6. Scheffrahn, R.H. Hsu, R.C.; Su, N.Y. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. Dec 1989. v. 43 (6). p. 899-903. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

1051

Gas chromatographic determination of CCRL583 perfluorinated alcohol fumigant residues.

JANCA2. Zehner, J.M. Simonaitis, R.A. Arlington, Va. : The Association. Journal of the Association of Official Analytical Chemists. July/Aug 1985. v. 68 (4). p. 749-750. Includes 3 references. (NAL Call No.: DNAL 381 AS7).

1052

Phosphine fumigation of thick-film polyethylene food bags and laminated film food packets (Tribolium castaneum, residues).

Highland, H.A. Leesch, J.G.; Cline, L.D.; Zehner, J.M. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1984. v. 77 (4). p. 1041-1045. Includes 7 references. (NAL Call No.: 421 J822).

1053

Special report: Integrated pest management (for the food industry, reducing reliance on the use of chemical fumigants and pesticides).

Stauffer, C.E. St. Paul, Minn. : American Association of Cereal Chemists. Cereal foods world. Apr 1984. v. 29 (4). p. 251-253. ill. (NAL Call No.: 59.8 C333).

FOOD CONTAMINATION, FIELD CROP

1054

Fumigation of imported shelled peanuts with methyl bromide (against khapra beetles, *Trogoderma granarium*, residues).

Leesch, J.G.PNTSB. Redlinger, L.M.; Young, C.T.; Sukkestad, D.R. Raleigh : American Peanut Research and Education Society. Peanut science. Jan/June 1983. v. 10 (1). p. 33-36. ill. Includes references. (NAL Call No.: SB351.P3P39).

1055

In-transit shipboard fumigation of grain: research to regulation.

CFWOD. Davis, R. Barrett, R.H. St. Paul, Minn. : American Association of Cereal Chemists. Abstract: The results of a cooperative research program involving USDA, national governments, and international agri-businesses for in-transit shipboard liquid fumigation of grain have been translated into regulations that ensure the safety and efficacy of the fumigation. The research program is described and fumigation implementation and emergency and aeration procedures are discussed. Research is continuing, to improve the current technology and to establish methodology to extend in-transit shipboard fumigation to other types of ships and commodities. Bioassay to assess the effectiveness of the fumigation also are discussed.(wz). Cereal foods world. Mar 1986. v. 31 (3). p. 227-229. ill. Includes 11 references. (NAL Call No.: DNAL 59.8 C333).

FOOD CONTAMINATION, HORTICULTURAL CROP

1056

Determination of dibromochloropropane and related fumigants in citrus fruit.

JFPRDR. Tonogai, Y. Ito, Y.; Ogawa, S.; Iwaida, M. Ames, Iowa : International Association of Milk, Food, and Environmental Sanitarians. Journal of food protection. Nov 1986. v. 49 (11). p. 909-913. Includes references. (NAL Call No.: DNAL 44.8 J824).

1057

Dibromochloropropane residues in peaches following fall orchard fumigation (DBCP).

Carter, G.E. Jr., Riley, M.B. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Mar/Apr 1984. v. 32 (2). p. 186-187. Includes references. (NAL Call No.: 381 J8223).

1058

EDB (ethylene dibromide) update (Use for post-harvest fumigation of papayas, Rebuttable Presumption Against Registration, Hawaii). Fujiyama, S. Honolulu : The Institute. Research extension series - Hawaii Institute of Tropical Agriculture and Human Resources. Oct 1982. Presented at the 17th Annual Hawaii Papaya Industry Association Conference, September, 1981. Oct 1982. (020). p. 47-50. (NAL Call No.: S481.R4).

1059

An electron capture gas chromatographic method for determination of residues of

1,2-dibromoethane in fumigated grapefruit.

King, J.R. AR-SO. Von Windeguth, D.L.; Burditt, A.K. Jr. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. Nov/Dec 1980. v. 28 (6). p. 1049-1052. 111. 11 ref. (NAL Call No.: 381 J8223).

1060

Estimating fumigant residues.

AGREA. Corliss, J. Washington, D.C. : The Service. Agricultural research - U.S. Department of Agriculture, Agricultural Research Service. Sept 1990. v. 38 (9). p. 27. (NAL Call No.: DNAL 1.98 AG84).

1061

Methyl bromide fumigation treatments for pistachio nuts to decrease residues and control navel orangeworm, *Amyelois transitella* (Lepidoptera: Pyralidae).

JEENAI. Hartsell, P.L. Nelson, H.D.; Tebbets, J.C.; Vail, P.V. College Park, Md. : Entomological Society of America. Journal of

economic entomology. Oct 1986. v. 79 (5). p. 1299-1302. Includes references. (NAL Call No.: DNAL 421 J822).

1062

Methyl bromide quarantine fumigations for Hawaii-grown Cucumbers infested with melon fly and oriental fruit fly (Diptera: tephritidae).

JEENAI. Armstrong, J.W. Garcia, D.L. College Park, Md. : Entomological Society of America. Journal of economic entomology. Dec 1985. v. 78 (6). p. 1308-1310. Includes references. (NAL Call No.: DNAL 421 J822).

1063

Methyl bromide residues and desorption rates from unshelled walnuts fumigated with a quarantine treatment for codling moth (Lepidoptera: Tortricidae).

JEENAI. Hartsell, P.L. Tebbets, J.C.; Vail, P.V. Lanham, Md. : Entomological Society of America. California walnuts were fumigated unshelled with a quarantine treatment to control codling moth, *Cydia pomonella* (L.). The treatment was done with 56 g/m³ methyl bromide for 4 h at 15.6 degrees C and a chamber pressure of 100 mm Hg. There were no significant differences in organic or inorganic bromide residues regardless of walnut cultivar or size. Inorganic residues were below the established tolerance level of 200 ppm. The 'Eureka' cultivar, although not significantly different in its desorption rate of residual methyl bromide, had higher organic residues than the other cultivars tested. Residue levels in treated nut meats showed no significant change in inorganic bromide content over a 25-d period. Accumulated inorganic bromide residues in nut meats fumigated once or twice with a domestic methyl bromide schedule (56 g/m³ for 24 h at 15.6 degrees C) to control field infestation and stored-product insects followed by fumigation with the quarantine treatment did not exceed the established tolerance level. Residual methyl bromide in treated nut meats stored unshelled at 1.7 or 10 degrees C was less than or equal to 10 ppb after 70 or 53 d, respectively, whereas those stored at 21 or 32 degrees C had less than or equal to 10 ppb after 20 or 14 d, respectively. Journal of economic entomology. Aug 1991. v. 84 (4). p. 1294-1297. Includes references. (NAL Call No.: DNAL 421 J822).

1064

Methyl bromide residues in fumigated mangos.

JAFCAU. Stein, E.R. Wolfenbarger, D.A. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Nov/Dec 1989. v. 37 (6). p. 1507-1509. Includes references. (NAL Call No.: DNAL 381 J8223).

(FOOD CONTAMINATION, HORTICULTURAL CROP)

1065

The quality of early-season table grapes fumigated with methyl bromide and sulfur dioxide (Phytotoxicity, *Vitis vinifera*, decay, residues).

Phillips, D.J. Austin, R.K.; Fouse, D.C.; Margosan, D.A. Alexandria : American Society for Horticultural Science. HortScience. Feb 1984. v. 19 (1). p. 92-93. Includes references. (NAL Call No.: SB1.H6).

1066

Radiation for fumigation: the FDA introduces some interesting problems (Citrus).

Los Angeles, California Citrograph Publishing Co. Citrograph. July 1981. v. 66 (9). p. 216. (NAL Call No.: 80 C125).

1067

Residues of methyl bromide in fumigated grapefruit determined by a rapid, headspace assay.

King, J.R. Benschoter, C.A.; Burditt, A.K. Jr. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1981. v. 29 (5). p. 1003-1005. ill. 11 ref. (NAL Call No.: 381 J8223).

1068

Sulfur dioxide fumigation of table grapes: relative sorption of SO₂ by fruit and packages, SO₂ residues, decay, and bleaching.

AJEVA. Harvey, J.M. Harris, C.M.; Hanke, T.A.; Hartsell, P.L. Davis, Calif. : American Society of Enologists. American journal of enology and viticulture. 1988. v. 39 (2). p. 132-136. Includes references. (NAL Call No.: DNAL 390.9 AM33).

FOOD COMPOSITION, HORTICULTURAL CROP

1069

Gamma radiation as a quarantine treatment for Fuller rose beetle eggs (Coleoptera: Curculionidae) on citrus fruit.
JEENAI. Johnson, J.A. Soderstrom, E.L.; Brandl, D.G.; Houck, L.G.; Wofford, P.L. Lanham, Md. : Entomological Society of America. Since 1985 when eggs of the Fuller rose beetle, *Pantomorus cervinus* (Boheman), were found by Japanese fruit inspectors under the calyxes of California citrus, researchers have sought to develop alternatives to methyl bromide fumigation as a suitable quarantine treatment for this pest. Three different ages of Fuller rose beetle eggs laid on waxed paper were exposed to gamma radiation doses of 10, 50, 100, and 150 Gy. The oldest age class (10-13 d old) was the least susceptible. Egg hatch of the two younger age classes (1-3 and 6-8 d old) was prevented by 50 Gy, whereas 150 Gy was needed to prevent hatch of older eggs. To confirm the efficacy of the method, lemons infested with 10- to 13-d-old Fuller rose beetle eggs were placed in the center of standard cardboard lemon cartons and irradiated at doses averaging 174.1 Gy. Egg hatch from egg clusters infesting untreated lemons averaged (mean \pm SEM) 42.5% \pm 4.66 per lemon. None of the estimated 6,500 eggs infesting irradiated lemons hatched. Damage of irradiated fruit varied but did not exceed a 6.1% increase compared with damage found in controls. These data show that irradiation of lemons could be an effective quarantine treatment against Fuller rose beetle eggs. *Journal of economic entomology*. June 1990. v. 83 (3). p. 905-909. Includes references. (NAL Call No.: DNAL 421 J822).

is a practical and efficacious method to disinfect nectarines of potential codling moth infestations for export to Japan. *Journal of economic entomology*. Dec 1990. v. 83 (6). p. 2335-2339. 111. Includes references. (NAL Call No.: DNAL 421 J822).

1070

A methyl bromide quarantine treatment to control codling moth (Lepidoptera: Tortricidae) on nectarines packed in shipping containers for export to Japan and effect on fruit attributes.
JEENAI. Yokoyama, V.Y. Miller, G.T.; Hartsell, P.L. Lanham, Md. : Entomological Society of America. Codling moth, *Cydia pomonella* (L.), eggs (n = 25,594) on 'Royal Giant' nectarines, *Prunus* sp., packed in styrene cup trays in Bliss-style, single wall, corrugated fiberboard shipping containers (one cup tray per container) did not survive a fumigation quarantine treatment (48 g/m³ methyl bromide, 2 h at greater than or equal to 21 degrees C, 50% load) currently used to treat nectarines in field bins for export to Japan. Fumigation of nectarines in shipping containers did not affect fruit weight loss, soluble solids or titratable acidity after 5 wk in storage (0-1 degrees C). Total carotenoid content was significantly lower in fumigated fruit than unfumigated control fruit after 1, 2, 3, and 5 wk of storage. Preconditioning (17 h at 21 degrees C) cooled fruit (approximately 2 degrees C) before fumigation and storage (1 wk at 0-1 degrees C) resulted in a significantly lower carotenoid content than untreated fruit, which may be related to delayed ripening that would extend shelf life. We propose that fumigation of nectarines in shipping containers

FEED PROCESSING AND STORAGE

1071

Maintaining quality of stored grain by aeration.

Noyes, R.T. Clary, B.L.; Cuperus, G.W.
Stillwater, Okla. : The Service. OSU extension
facts - Cooperative Extension Service, Oklahoma
State University. Sept 1991. (1100,rev.). 4 p.
(NAL Call No.: DNAL S544.3.0505).

AGRICULTURAL PRODUCTS – GENERAL

1072

**Fungicides, nematicides, and soil fumigants
(Glossary of chemicals).**

Boone, D.M. Grau, C.R.; Stevenson, W.R.; Worf, G.L. Madison : The Programs. Publication - Cooperative Extension Programs. University of Wisconsin - Extension. 1983. 1983. (A2336). 4 p. (NAL Call No.: S544.3.W6W53).

AGRICULTURAL PRODUCTS – PLANT

1073

Phytotoxic reaction of Hawaiian cut flowers and foliage to hydrogen cyanide fumigation.

HJHSA. Hansen, J.D. Chan, H.T. Jr.; Hara, A.H.; Tenbrink, V.L. Alexandria, Va. : American Society for Horticultural Science. HortScience. Jan 1991. v. 26 (1). p. 53-56. Includes references. (NAL Call No.: DNAL SB1.H6).

POLLUTION

1074

A branch exposure chamber for fumigating ponderosa pine to atmospheric pollution.

JEVQAA. Houpis, J.L.J. Costella, M.P.; Cowles, S. Madison, Wis. : American Society of Agronomy. The investigation of the effects of atmospheric pollution on metabolism and growth of woody species has long been hampered by the very difficult task of exposing mature individuals to controlled environments of air pollutants. This paper describes the design, construction, and testing of an alternative tool to whole-tree enclosures for measuring pollution response in mature woody tissue. The chamber is a new design, though not a new concept, and is referred to as a branch exposure chamber. Designed primarily for ozone and acid precipitation exposures (and used additionally for CO₂ measurements), the branch exposure chamber incorporates four major parts: support structure, fan-air supply unit, charcoal filter unit, and exposure chamber. The exposure chamber is a 1.5-m long by 0.7-m diam. cylinder. The chamber is constructed of Teflon sheeting stretched over an aluminum frame; the aluminum frame is totally wrapped with nonreactive, aluminum-backed Teflon tape. Three zones in the chamber affect exposure of the experimental tissue: an initial buffer region for mixing, a main exposure region, and an exhaust frustum. Aerodynamic testing of the chamber-mixing characteristics show that mixing is uniform and complete within the main exposure region. Thermal buildup within the chamber was a maximum of 3 degrees C under a wide range of ambient meteorological conditions. Based on current field trials of the chamber, material deterioration due to environmental variables (e.g., ultraviolet radiation, heat oxidants), is not expected to affect operation of the chamber for 24 mo. The BEC is inexpensive to build and operate, and represents a viable alternative to a whole-tree chamber. Journal of environmental quality. Apr/June 1991. v. 20 (2). p. 467-474. Includes references. (NAL Call No.: DNAL QH540.J6).

1075

Changes in foliar concentration of abscisic acid in soybean in response to sulfur dioxide fumigation.

JEVQAA. Gupta, G. Sandhu, R.; Mulchi, C. Madison, Wis. : American Society of Agronomy. Soybean Glycine max (L.) Merr. cv. Elf plants were exposed to 0.0, 0.05, 0.2, and 0.4 micromole mol⁻¹ SO₂ in a controlled environment. The amount of abscisic acid (ABA) was measured, using an enzyme linked immunosorbent assay (ELISA), after 1, 2, or 4 h of exposure as well as after 18 h of recovery period. With 0.05 micromole mol⁻¹ the ABA concentrations in soybean leaves were 28 and 141% higher than the control, with 1 and 4 h exposures, respectively; after an 18-h recovery period, the ABA concentrations were still higher (23.6 and 42.8% for the 1 and 4 h exposures, respectively). Abscisic acid concentration increased in soybean leaves both with an increase in the concentration of SO₂ and the time of exposure. Journal of

environmental quality. Jan/Mar 1991. v. 20 (1). p. 151-152. Includes references. (NAL Call No.: DNAL QH540.J6).

1076

Chromatographic and mutagenic analyses of 1,2-dichloropropane and 1,3-dichloropropylene and their degradation products.

BECTA6. Connors, T.F. Stuart, J.D.; Cope, J.B. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. Feb 1990. v. 44 (2). p. 288-293. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

1077

Comparative ozone dose response of gas exchange in a ponderosa pine stand exposed to long-term fumigations.

Coyne, P.I. Bingham, G.E. Pittsburgh, Pa., William G. Hamlin. Journal of the Air Pollution Control Association. Jan 1981. v. 31 (1). p. 38-41. 111. 26 ref. (NAL Call No.: 449.9 A17).

1078

Contamination of ground water as a result of agricultural use of ethylene dibromide (EDB).

Marin, P.A. Droste, E.X. Dublin, OH : The Association, 1986? . Proceedings of the third annual Eastern Regional Ground Water Conference : July 28-30, 1986, Springfield, Massachusetts / Sponsors, National Water Well Association ... et al. . Includes statistical data. p. 277-306. maps. Includes references. (NAL Call No.: DNAL GB1001.2.E27 1986).

1079

The costs of a ban on soil fumigants.

Harrison, J. Washington, D.C. : The Service. Farmline - U.S. Department of Agriculture, Economic Research Service. July 1989. v. 10 (7). p. 9. (NAL Call No.: DNAL aHD1401.A2U52).

1080

Dependence of tetrachloroethylene dechlorination on methanogenic substrate consumption by Methanosarcina sp. strain DCM.

APMBA. Fathepure, B.Z. Boyd, S.A. Washington, D.C. : American Society for Microbiology. Tetrachloroethylene (perchloroethylene, PCE) is a suspected carcinogen and a common groundwater contaminant. Although PCE is highly resistant to aerobic biodegradation, it is subject to reductive dechlorination reactions in a variety of anaerobic habitats. The data presented here clearly establish that axenic cultures of Methanosarcina sp. strain DCM dechlorinate PCE to trichloroethylene and that this is a biological reaction. Growth on methanol, acetate, methylamine, and trimethylamine

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resulted in PCE dechlorination. The reductive dechlorination of PCE occurred only during methanogenesis, and no dechlorination was noted when CH₄ production ceased. There was a clear dependence of the extent of PCE dechlorination on the amount of methanogenic substrate (methanol) consumed. The amount of trichloroethylene formed per millimole of CH₄ formed remained essentially constant for a 20-fold range of methanol concentrations and for growth on acetate, methylamine, and trimethylamine. These results suggest that the reducing equivalents for PCE dechlorination are derived from CH₄ biosynthesis and that the extent of chloroethylene dechlorination can be enhanced by stimulating methanogenesis. It is proposed that electrons transferred during methanogenesis are diverted to PCE by a reduced electron carrier involved in methane formation. Applied and environmental microbiology. Dec 1988. v. 54 (12). p. 2976-2980. ill. Includes references. (NAL Call No.: DNAL 448.3 AP5).

1081

Design and performance of branch chambers suitable for long-term ozone fumigation of foliage in large trees.

JEVQAA. Teskey, R.O. Dougherty, P.M.; Wiselogle, A.E. Madison, Wis. : American Society of Agronomy. Fumigation chambers for exposing branches of mature trees to ozone (O₃) were developed and used in a 2-yr field study. The performance compared very favorably with that of open-top chambers. The branch chambers were cylindrical with dimensions of 1.5 by 0.5 m. To examine the effects that the chamber alone might have on branch or foliage physiology and phenology, six chambers were placed on the branches of trees that had no additional treatments (i.e., no charcoal filtration or O₃ amendments). These chambers produced no significant effects on the growth of the branches or foliage within them, as compared with adjacent, nonchambered branches. Hourly net photosynthetic rates were also very similar. The air in the chambers was exchanged 10 times per minute, which resulted in nearly identical air temperatures, relative humidities, and CO₂ concentrations inside and outside the chambers. Only light levels were significantly lower within the chambers, which was due primarily to the light transmission properties of the PVC plastic covering the chambers. This approach allows long-term fumigations to be made on mature tissue of large trees, providing an alternative to the use of seedlings in studies of the effects of O₃ or other gases on forest species. Journal of environmental quality. July/Sept 1991. v. 20 (3). p. 591-595. Includes references. (NAL Call No.: DNAL QH540.J6).

1082

Desorption of residual sulfonyl fluoride from structural and household commodities by headspace analysis using gas chromatography. BECTA. Scheffrahn, R.H. Osbrink, W.L.A.; Hsu, R.C.; Su, N.Y. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. Nov 1987. v. 39 (5). p. 769-775. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

1083

Determination of acute toxic effects in mice following exposure to methyl bromide.

JTEHD6. Alexeeff, G.V. Kilgore, W.W.; Munoz, P.; Watt, D. Washington, D.C. : Hemisphere Publishing. Journal of toxicology and environmental health. 1985. v. 15 (1). p. 109-123. ill. Includes references. (NAL Call No.: DNAL RA565.A1J6).

1084

Differential ozone susceptibility of Centennial Russett and White Rose potato as demonstrated by fumigation and antioxidant treatments (Cultivars, California).

Foster, K.W. APOJA. Guerard, J.P.; Oshima, R.J.; Bishop, J.C.; Timm, H. Orono : Potato Association of America. American potato journal. Feb 1983. v. 60 (2). p. 127-139. ill. 15 ref. (NAL Call No.: 75.8 P842).

1085

Dissipation of 1,2-dibromo-3-chloropropane (DBCP), cis-1,3-dichloropropene (1,3-DCP), and dichloropropenes from soil to atmosphere.

BECTA. Albrecht, W.N. Chenchin, K. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. June 1985. v. 34 (6). p. 824-831. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

1086

Effects of ozone and sulfur dioxide on phyllosphere fungi from three tree species.

APMBA. Fenn, M.E. Dunn, P.H.; Durall, D.M. Washington, D.C. : American Society for Microbiology. Short-term effects of ozone (O₃) on phyllosphere fungi were studied by examining fungal populations from leaves of giant sequoia (*Sequoiadendron giganteum* (Lindl.) Buchholz) and California black oak (*Quercus kelloggii* Newb.). Chronic effects of both O₃ and sulfur dioxide (SO₂) were studied by isolating fungi from leaves of mature Valencia orange (*Citrus sinensis* L.) trees. In this chronic-exposure experiment, mature orange trees were fumigated in open-top chambers at the University of California, Riverside, for 4 years with filtered air, ambient air plus filtered air (1:1), ambient air, or filtered air plus SO₂ at

9.3 parts per hundred million. Populations of *Alternaria alternata* (Fr.) Keissler and *Cladosporium cladosporioides* (Fres.) de Vries, two of the four most common fungi isolated from orange leaves, were significantly reduced by chronic exposure to ambient air. In the short-term experiments, seedlings of giant sequoia or California black oak were fumigated in open-top chambers in Sequoia National Park for 9 to 11 weeks with filtered air, ambient air, or ambient air plus O₃. These short-term fumigations did not significantly affect the numbers of phyllosphere fungi. Exposure of Valencia orange trees to SO₂ at 9.3 parts per hundred million for 4 years reduced the number of phyllosphere fungi isolated by 75% compared with the number from the filtered-air treatment and reduced the Simpson diversity index value from 3.3 to 2.5. A significant chamber effect was evident since leaves of giant sequoia and California black oak located outside of chambers had more phyllosphere fungi than did seedlings within chambers. Results suggest that chronic exposure to ambient ozone or SO₂ in polluted areas can affect phyllosphere fungal communities, while short-term exposures may not significantly disturb phyllosphere fungi. *Applied and environmental microbiology*. Feb 1989. v. 55 (2). p. 412-418. Includes references. (NAL Call No.: DNAL 448.3 AP5).

1087

Effects of ozone or sulfur dioxide on pitch pine seedlings.

JEVQAA. Scherzer, A.J. McClenahan, J.R. Madison, Wis. : American Society of Agronomy. Pitch pine seedlings (*Pinus rigida* Mill.) were fumigated with O₃ or SO₂ to determine their effects on growth and symptom expression. Seedlings fumigated twice with 0.20 microliter O₃-L-1 for 4 hr at age 14 and 22 wk had significantly greater shoot weight than those fumigated with 0.30 microliter O₃-L-1; 0, 0.08, 0.10, and 0.15 microliter L-1 were intermediate and not significantly different. Root starch content tended to decrease with increasing O₃ with control seedlings being significantly higher than the 0.15, 0.20, and 0.30 microliter O₃-L-1 treatments. Root starch of seedlings treated with 0.20, 0.50, 0.60, 0.70, and 0.90 microliter SO₂-L-1 was significantly lower than the controls. Seedlings from six families fumigated for 5 wk starting at age 6 wk differed in direction and degree of growth response when exposed to 0.08 and 0.30 microliter O₃-L-1. Significant differences existed among families for needle weight, shoot weight, and total weight. No differences were found among O₃ treatments within a family, but patterns suggest some pitch pine individuals may be sensitive to low O₃ while others are stimulated. Visible injury consisted of light chlorotic mottle on oldest needles. Discriminant function analysis indicated that growth responses were indistinguishable among families receiving no treatment; however, treated seedlings could be classified based on various height measurements and/or shoot weight. Differences in visible injury were apparent among families of seedlings treated with 0.40 microliter O₃-L-1, indicating some

pitch pine families are more sensitive to O₃ than others. *Journal of environmental quality*. Jan/Mar 1989. v. 18 (1). p. 57-61. Includes references. (NAL Call No.: DNAL QH540.J6).

1088

Effects of simulated ozone and sulfur dioxide fumigations on soybeans in open-top field chambers (Air pollution).

Pratt, G.C. Pittsburgh, Pa. : Air Pollution Control Association. Proceedings ... APCA annual meeting. 1983. v. 1 (76th). p. 83-2.1/1-83-2.1/21. ill. Includes references. (NAL Call No.: TD881.A56).

1089

Effects of sulfur dioxide fumigation in open-top field chambers on soil acidification and exchangeable aluminum (Tomato, *Lycopersicon esculentum*, acid rain, air pollution).

Lee, E.H. Heggstad, H.E.; Bennett, J.H. Madison, Wis., American Society of Agronomy. *Journal of environmental quality*. Jan/Mar 1982. v. 11 (1). p. 99-102. ill. 26 ref. (NAL Call No.: QH540.J6).

1090

Effects of sulfur dioxide fumigation on photosynthesis, respiration, and chlorophyll content of selected lichens (*Parmelia bohliana*, *Physcia stellaris*, *Xanthoria fallax*, *Physconia grisea*, air pollution).

Beekley, P.K. Hoffman, G.R. Springfield, Mo., American Bryological and Lichenological Society. *The Bryologist*. Fall 1981. v. 84 (3). p. 379-390. ill. Includes ref. (NAL Call No.: 450 B84).

1091

Efficacy of sweep-shank fumigation with 1,3-dichloropropene against *pratylenchus* penetrans and subsequent groundwater contamination.

PLDRA. Loria, R. Eplee, R.E.; Baier, J.H.; Martin, T.M.; Moyer, D.D. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. Jan 1986. v. 70 (1). p. 42-45. ill. Includes 18 references. (NAL Call No.: DNAL 1.9 P69P).

1092

Emission of hydrogen sulfide from sulfur dioxide-fumigated pine trees (*Pinus sylvestris*).

Hallgren, J.E. Fredriksson, S.A. Rockville, Md., American Society of Plant Physiologists. *Plant physiology*. Aug 1982. v. 70 (2). p. 456-459. 15 ref. (NAL Call No.: 450 P692).

(POLLUTION)

1093

Ethylene dibromide mineralization in soils under aerobic conditions.

APMBA. Pignatello, J.J. Washington, D.C. : American Society for Microbiology. Applied and environmental microbiology. Mar 1986. v. 51 (3). p. 588-592. Includes 22 references. (NAL Call No.: DNAL 448.3 AP5).

1094

Fall fumigation of potato with 1,3-dichloropropene: efficacy against *Pratylenchus crenatus*, yield response, and groundwater contamination potential.

PLDIDE. Kotcon, J.B. Loria, R. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1986. v. 71 (12). p. 1122-1124. Includes references. (NAL Call No.: DNAL 1.9 P69P).

1095

Field chambers for assessing crop loss from air pollutants.

JEVQAA. Musselman, R.C. McCool, P.M.; Oshima, R.U.; Teso, R.R. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Apr/June 1986. v. 15 (2). p. 152-157. ill. Includes references. (NAL Call No.: DNAL QH540.U6).

1096

Growth response of green and white ash seedlings to ozone, sulfur dioxide, and simulated acid rain.

FOSCA. Chappelka, A.H. Chevone, B.I.; Burk, T.E. Bethesda, Md. : Society of American Foresters. Nine-week-old green (*Fraxinus pennsylvanica* Marsh.) and white (*F. americana* L.) ash were exposed to O₃ and/or SO₂ (control, 0.10 ppm O₃, 0.08 ppm SO₂, or 0.10 ppm O₃ + 0.08 ppm SO₂) for 4 h d⁻¹, 5 d wk⁻¹ in combination with simulated rain (pH 3.0, 4.3 or 5.6, 1 h d⁻¹, 2 d wk⁻¹ at 0.75 cm h⁻¹) for 6 weeks, under controlled laboratory conditions, with rain applied either just before or after fumigation. Across all rain treatments, white ash biomass was suppressed by the application of O₃ and cumulative shoot elongation of green ash exposed to O₃ and/or SO₂ was less than controls. The combination of O₃ + SO₂ did not affect the growth of either species more than the pollutants applied alone. Leaf area ratio (LAR) and root to shoot ratio (RSR) exhibited quadratic responses to rain pH in green ash, across all pollutant treatments. Significant pollutant X pH interactions occurred in leaf weight ratio (LWR) in green ash and LAR and RSR in white ash. Significant linear increases in LAR and decreases in RSR, with decreasing pH, were observed for O₃ and SO₃-treated white ash. These findings are discussed relative to implications of the effects of gaseous pollutants in combination with acid rain on green and white ash growth. FOR. SCI.

34(4):1016-1029. Forest science. Dec 1988. v. 34 (4). p. 1016-1029. Includes references. (NAL Call No.: DNAL 99.8 F7632).

1097

Handling a fumigant waste.

JPCAAC. Morse, H.N. Pittsburgh, Pa. : Air Pollution Control Association. JAPCA. Sept 1988. v. 38 (9). p. 1239. Includes references. (NAL Call No.: DNAL 449.9 AI7).

1098

Health and environmental effects profile for methyl bromide.

Cincinnati, Ohio : Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, 1986. Cover title. ~ "June 1986." ~ "PB88242367." ~ "EPA/600/X-86/171." xiv, 79 leaves ; 28 cm. Bibliography: leaves 60-79. (NAL Call No.: DNAL TD177.H42).

1099

The impact of sulfur dioxide fumigation on photosynthetic and ultrastructural responses of mesophyll cells in developing *Pinus strobus* needles. III. Transition zone.

Crang, R.E. Vassilyev, A.E.; Kravkina, I.M. Broomall, PA : Northeastern Forest Experiment Station, 1989? . Air pollution effects on vegetation, including forest ecosystems : proceedings of the Second US-USSR Symposium / edited by Reginald D. Noble, Juri L. Martin, and Keith F. Jensen. Papers presented at an International Conference, September 13-25, 1988, at Corvallis, Oregon; Raleigh, North Carolina; Gatlinburg, Tennessee. p. 91-96. ill. Includes references. (NAL Call No.: DNAL aQK751.U7 1988).

1100

Increased aeration of citrus fumigated with ethylene dibromide (Caribbean fruit fly, *Anastrepha suspensa*, air pollution).

Miller, W.M. PFSHA. Ismail, M.A.; Craig, J.O. Lake Alfred : The Society. Proceedings of the ... annual meeting - Florida State Horticultural Society. 1982. v. 95. p. 216-218. Includes references. (NAL Call No.: 81 F66).

1101

Microbial degradation of 1,2-dibromoethane in shallow aquifer materials.

JEVQAA. Pignatello, J.J. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1987. v. 16 (4). p. 307-312. Includes references. (NAL Call No.: DNAL QH540.U6).

1102

Microdetermination of ethylene dibromide in air by gas chromatography (Air pollution, fumigants, carcinogens, chemical analysis).
 Dumas, T. JANCA. Bond, E.J. Arlington : The Association. Journal of the Association of Official Analytical Chemists. Nov 1982. v. 65 (6). p. 1379-1381. 3 ref. (NAL Call No.: 381 A57).

1103

Open-air fumigation system for investigating sulfur dioxide effects on crops (Soybeans, air pollution effects).
 Miller, J.E. Sprugel, D.G.; Muller, R.N.; Smith, H.J.; Xerikos, P.B. St. Paul, Minn., American Phytopathological Society. Phytopathology. Dec 1980. v. 70 (12). p. 1124-1128. ill. 14 ref. (NAL Call No.: 464.8 P56).

1104

Persistence of 1,2-dibromoethane in soils: entrapment in intraparticle micropores.
 ESTHAG. Steinberg, S.M. Pignatello, J.J.; Sawhney, B.L. Washington, D.C. : American Chemical Society. Environmental science & technology. Dec 1987. v. 21 (12). p. 1201-1208. Includes references. (NAL Call No.: DNAL TD420.A1E5).

1105

Photohydrolysis of methyl bromide and chloropicrin (Transformation of soil fumigants).
 Castro, C.E. Belser, N.O. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1981. v. 29 (5). p. 1005-1008. ill. 14 ref. (NAL Call No.: 381 J8223).

1106

A portable gas chromatograph for macro- and microdetermination of fumigants in the field.
 Bond, E.J. Dumas, T. Washington, American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1982. v. 30 (5). p. 986-988. ill. 1 ref. (NAL Call No.: 381 J8223).

1107

The use of lichen fumigation studies to evaluate the effects of new emission sources on class I areas.
 JPCAAC. Hart, R. Webb, P.G.; Biggs, R.H.; Portier, K.M. Pittsburgh, Pa. : Air Pollution Control Association. JAPCA. Feb 1988. v. 38 (2). p. 144-147. Includes references. (NAL Call No.: DNAL 449.9 A17).

MATHEMATICS AND STATISTICS

1108

Estimating fumigant residues.

AGREA. Corliss, J. Washington, D.C. : The Service. Agricultural research - U.S. Department of Agriculture, Agricultural Research Service. Sept 1990. v. 38 (9). p. 27. (NAL Call No.: DNAL 1.98 AG84).

1109

Simulations comparing insect species differences in response to wheat storage conditions and management practices.

JEENAI. Hagstrum, D.W. Flinn, P.W. Lanham, Md. : Entomological Society of America. Seasonal changes in the populations of *Cryptolestes ferrugineus* (Stephens), *Oryzaephilus surinamensis* (L.), *Rhyzopertha dominica* (F.), *Sitophilus oryzae* (L.), and *Tribolium castaneum* (Herbst) and differences in their response to pest management programs were compared using validated population-growth-simulation models. The population growth of the five pest species differed in response to temperature and grain moisture conditions during storage, and this partially explains differences among species in their response to management practices. Aerating earlier in the storage season was generally more effective in limiting population growth of *C. ferrugineus* and *O. surinamensis* than the other species. Although fumigation was equally effective against all species, *S. oryzae* was able to grow more rapidly than the others as temperatures decreased in the fall. The internal feeders, *R. dominica* and *S. oryzae*, were much less affected by malathion protectant than the other three external-feeding species. As indicated by these three examples, it would sometimes be advantageous to know which species are present in choosing a management program. Journal of economic entomology. Dec 1990. v. 83 (6). p. 2469-2475. Includes references. (NAL Call No.: DNAL 421 J822).

DOCUMENTATION

1110

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HUMAN MEDICINE, HEALTH AND SAFETY

1111

Allergic bronchopulmonary aspergillosis: reactivity of IgE (immunoglobulin E) and IgG (immunoglobulin G) antibodies with antigenic components of *Aspergillus fumigatus* (IgE/IgG antigen complexes).
Longbottom, J.L. JACIB. St. Louis : C.V. Mosby Co. The Journal of allergy and clinical immunology. Dec 1983. v. 72 (6). p. 668-675. ill. Includes references. (NAL Call No.: 448.8 J8236).

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Antigens and allergens of *Aspergillus fumigatus*. I. Characterization by quantitative immunoelectrophoretic techniques.
JACIB. Longbottom, J.L. Austwick, P.K.C. St. Louis, Mo. : C.V. Mosby Co. The Journal of allergy and clinical immunology. July 1986. v. 78 (1,pt.1). p. 9-17. ill. Includes references. (NAL Call No.: DNAL 448.8 J8236).

1113

Antigens and allergens of *Aspergillus fumigatus*. II. Their further identification and partial characterization of a major allergen (Ag 3).
JACIB. Longbottom, J.L. St. Louis, Mo. : C.V. Mosby Co. The Journal of allergy and clinical immunology. July 1986. v. 78 (1,pt.1). p. 18-24. ill. Includes references. (NAL Call No.: DNAL 448.8 J8236).

1114

Applying pesticides correctly a guide for private and commercial applicators.
Columbus, Ohio? : Ohio State University, Cooperative Extension Service, 1989. Abstract: This guide for private and commercial applicators explains how to properly and safely apply pesticides, understand pesticide labels, select pesticides, and choose and calibrate equipment. Information on pests, pesticide laws and regulations, protective clothing, poisoning symptoms and first aid is provided. It contains a pesticide index, defined terms, a table listing effects of pesticides on the body, calibration formulae and examples, and drawings. Cover title. ~ "Reprinted 12/89-5M-70942"--P. 4 of cover. ~ Agdex 600. ~ Includes index. 122 p. : ill. ; 28 cm. (NAL Call No.: DNAL 275.29 OH32 no.713).

1115

Biological monitoring of dichloropropene: air concentrations, urinary metabolite, and renal enzyme excretion.
AEHLA. Osterloh, J.D. Wang, R.; Schneider, F.; Maddy, K. Washington, D.C. : Heldref Publications. Archives of environmental health. July/Aug 1989. v. 44 (4). p. 207-213. Includes

references. (NAL Call No.: DNAL RC963.A1A7).

1116

Dissipation of 1,2-dibromo-3-chloropropane (DBCP), cis-1,3-dichloropropene (1,3-DCP), and dichloropropenes from soil to atmosphere.
BECTA. Albrecht, W.N. Chenchin, K. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. June 1985. v. 34 (6). p. 824-831. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

1117

Fluoride residues in frozen foods fumigated with sulfuryl fluoride.
BECTA6. Scheffrahn, R.H. Hsu, R.C.; Su, N.Y. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. Dec 1989. v. 43 (6). p. 899-903. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

1118

Human genotoxicity: pesticide applicators and phosphine.
SCIEA. Garry, V.F. Griffith, J.; Danzi, T.J.; Nelson, R.L.; Whorton, E.B.; Krueger, L.A.; Cervenka, J. Washington, D.C. : American Association for the Advancement of Science. Fumigant applicators who, 6 weeks to 3 months earlier, were exposed to phosphine, a common grain fumigant, or to phosphine and other pesticides had significantly increased stable chromosome rearrangements, primarily translocations in G-banded lymphocytes. Less stable aberrations including chromatid deletions and gaps were significantly increased only during the application season, but not at this later time point. During fumigant application, measured exposure to phosphine exceeds accepted national standards. Because phosphine is also used as a dopant in the microchip industry and is generated in waste treatment, the possibility of more widespread exposure and long-term health sequelae must be considered. Science. Literature review. Oct 13, 1989. v. (246). p. 251-255. ill. Includes references. (NAL Call No.: DNAL 470 SCI2).

1119

Industrial, institutional, structural, and health related study questions /compiled and edited by Gene Burgess.
Burgess, Gene. Tennessee : University of Tennessee, Agricultural Extension Service, 1988? . Abstract: This manual is a compilation of multiple choice study questions designed to familiarize Tennessee pesticide applicants with industrial, institutional, structural and health related certification examination questions. Specific topics covered are common insects and arthropod pests, stored grain insects, fumigants, vertebrate pests, weeds,

(HUMAN MEDICINE, HEALTH AND SAFETY)

pesticide dilution formulation, and safety procedures. The answers are included. Cover title: Category 7 study questions.~ EC1013. 31, 1 p. ; 28 cm. (NAL Call No.: DNAL SB950.2.T2C37 1988).

1120

Inhalation exposure of grain samplers and grain inspectors to carbon tetrachloride.

ACSMC. Deer, H.M. McJilton, C.E.; Karein, P.K.; Sumner, W. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. 1985. (273). p. 221-241. Includes 57 references. (NAL Call No.: DNAL QD1.A45).

1121

Inhalation exposure of museum personnel to ethylene dichloride-carbon tetrachloride fumigant.

ACSMC. Spittler, T.D. Bourke, J.B.; Baker, P.B.; Helfman, G.W. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. 1985. (273). p. 243-251. Includes 3 references. (NAL Call No.: DNAL QD1.A45).

1122

Management of pesticide poisoning produced by Biomedical Communications, University of Nebraska Medical Center in cooperation with the Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln and the Extension Service, U.S. Department of Agriculture.

Omaha, NE : Biomedical Communications, 198-? . Abstract: Covers how pesticides enter the body, symptoms of poisoning, steps for treating poisoning victim upon arrival at the hospital, and use of label information and Poison Control Centers. Gives information on treatment of poisoning by organophosphates or carbamates, organochlorines, dipyrldyls (paraquat and diquat), fumigants, and strychnine. For nurses. Sound accompaniment compatible with manual and automatic operation. 111 slides : col. + 1 audible pulse sound cassette (14 min.) + 1 inaudible pulse sound cassette (14 min.) + 1 script (16 p.). (NAL Call No.: DNAL Slide no.345).

1123

Management of pesticide poisoningsa guide for physicians /produced by Biomedical Communications, University of Nebraska Medical Center in cooperation with the Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln and the Extension Service, U.S. Dept. of Agriculture.

Omaha, NE : Biomedical Communications, 198-? . Abstract: Covers routes of exposure to pesticides, symptoms of systemic poisoning,

tips for diagnosis including atropine refractory test, and treatment of poisoning by organophosphates or carbamates, organochlorines, dipyrldyls (paraquat and diquat), fumigants, and strychnine. Considerable discussion of other illnesses which may cause symptoms similar to pesticide poisoning symptoms. For health providers. Sound accompaniment compatible with manual and automatic operation. 119 slides : col. + 1 audible pulse sound cassette (17 min.) + 1 inaudible pulse sound cassette (17 min.) + 1 script (19 p.). (NAL Call No.: DNAL Slide no.346).

1124

Management of pesticide poisoningsguide for emergency personnel /produced by Biomedical Communications, University of Nebraska Medical Center in cooperation with the Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln and the Extension Service, U.S. Department of Agriculture.

Omaha, NE : Biomedical Communications, 198-? . Abstract: Covers how pesticides enter the body, poisoning symptoms and first aid for organophosphates and carbamates, organochlorines, dipyrldyls, fumigants, and strychnine. Gives examples of appropriate response in several different types of poisoning incidents. Also discusses how emergency workers should protect themselves from being poisoned and decontaminate after contact with pesticide residues. For emergency personnel. Sound accompaniment compatible with manual and automatic operation. 104 slides : col. + 1 audible pulse sound cassette (13 min.) + 1 inaudible pulse sound cassette (13 min.) + 1 script (16 p.). (NAL Call No.: DNAL Slide no.344).

1125

Measurement of specific IgE (immunoglobulin E) and IgG (immunoglobulin G) antibodies against Aspergillus fumigatus antigen in patient sera by use of enzyme immunoassays: influence of different procedures of antigen immobilization.

Van der Heide, S. Kauffman, H.F.; De Vries, K. St. Louis, Mo. : C.V. Mosby Co. The Journal of allergy and clinical immunology. June 1984. v. 73 (6). p. 813-818. 111. Includes references. (NAL Call No.: 448.8 J8236).

1126

Occupational exposure to 1,3-dichloropropene (Telone II) in Hawaiian pineapple culture.

AEHLA. Albrecht, W.N. Washington, D.C. : Heldref Publications. Archives of environmental health. Sept/Oct 1987. v. 42 (5). p. 286-291. Includes references. (NAL Call No.: DNAL RC963.A1A7).

(HUMAN MEDICINE, HEALTH AND SAFETY)

1127

Outgassing of ethylene dibromide from fumigated oranges (Worker exposure to pesticides).

Rappaport, S.M. Cameron, W.; McAllister, J. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Sept/Oct 1984. v. 32 (5). p. 1112-1116. ill. Includes 10 references. (NAL Call No.: 381 J8223).

1128

Pest management principles for the Wisconsin farmer fumigant pesticides /Ron Doersch ... et al. .

Doersch, R. E. Madison, Wis.? : University of Wisconsin-Extension?, 1991 . Training manual for private pesticide applicators using fumigant pesticides; it supplements the core manual pest management principles for the Wisconsin farmer. Major topics: pest management principles for fumigating soil, raw agricultural commodities, and agricultural structures; toxicity of pesticides; protecting human health and the environment; disposal; application methods, and label information. Cover title.~ "January 1991."~ Supplements the training manual, Pest management principles for the Wisconsin farmer, 2nd ed. iii, 46 p. : ill. ; 28 cm. (NAL Call No.: DNAL SB950.2.W6P482).

1129

Safety measures in handling stored grain.

Kramer, J.A. Stillwater, Okla. : The Service. Circular E - Oklahoma State University, Cooperative Extension Service. Paper presented at the 1990 Proceedings, Fumigation Workshop. Jan 1989. (888). p. 53-59. ill. Includes references. (NAL Call No.: DNAL 275.29 OK41C).

1130

Safetyself-contained breathing apparatus and canister-type gas masks /developed by the National Pest Control Association.

Dunn Loring, Va. : The Association, c1989. Basic components of, how to fit and operate, and when to use self-contained breathing apparatus (SCBA) and canister-type gas masks, respiratory protective devices used by fumigators, are described and demonstrated in this National Pest Control Association video training program for service technicians. It emphasizes the need to always follow manufacturer's directions and perform preuse safety checks. The video is accompanied by an owner/manager/trainer manual which provides practical training tips; presentation guidelines; 20 fill-in-the-blank, multiple choice, and true or false pretest and post test questions, a work sheet, and an answer sheet; and the video script. VHS.~ "A video training program"--Manual t.p.~ Manual has 1990 copyright date. i videocassette (20 min.) : sd., col. ; 1/2 in. + i manual. (NAL Call No.: DNAL Videocassette no.999).

1131

Signs and symptoms of pesticide poisoningproduced by University of Nebraska Cooperative Extension Service.

Lincoln, Neb.? : The Service, c1991. This videotape identifies the signs and symptoms of pesticide poisoning by organophosphates and carbamates, fumigants, organochlorines, bipyridyls and wood preservatives. Actions to take to prevent serious consequences of over-exposure are outlined. It emphasizes the importance of telling someone what chemicals you will be using and when you will apply them, always following pesticide label directions and always wearing protective equipment. VHS.~ Title on cassette label: Signs & symptoms of pesticide poisoning.~ A joint production of the Cooperative Extension Services of Iowa State University, Kansas State University, University of Nebraska, University of Missouri through a grant from the U.S. Environmental Protection Agency. i videocassette (12 min., 27 sec.) : sd., col. ; 1/2 in. (NAL Call No.: DNAL Videocassette no.987).

1132

Structural, institutional and health related, subcategory: fumigation : commercial pesticide applicators manual. -.

Russell, Harold G.; Evenson, M. R.& Commercial pesticide applicators manual. (Stillwater) Oklahoma State University, Cooperative Extension Service (1980?). Cover title ~Pesticide Applicators Training collection ~"This manual was adopted for Oklahoma from a certificate manual that was prepared by Harold G. Russell, Jr. ... with additions by M. R. Evenson ..." -- Preface. 32 p. : ill. ; 28 cm. (NAL Call No.: SB955.S7).

1133

Structural pest control : category 7E / (F. Robert Henderson, Lynne C. Thompson, Vernon McKinzie). -.

Henderson, F. Robert. Thompson, Lynne C.; McKinzie, Vernon.& Commercial pesticide applicator certification and recertification study manual. Manhattan Cooperative Extension Service, Kansas State University 1980. Pesticide Applicator Training Collection ~Cover title ~At head of title: Commercial pesticide applicator certification and recertification study manual ~S-i5 ~"July 1980.". 58 p. : ill. ; 28 cm. (NAL Call No.: SB955.H4).

1134

Studies with gaseous mutagens in Drosophila melanogaster.

EVSRB. Krammers, P.G.N. Bissumbar, B.; Mout, H.C.A. New York : Plenum Press. Environmental science research. Paper presented at the "Symposium on Short-Term Genetic Bioassays in the Evaluation of Complex Environmental Mixtures," 1984, Chapel Hill, North Carolina.

1985. v. 32. p. 65-73. ill. Includes references. (NAL Call No.: DNAL TD172.E55).

1135

Toxicology and hazard assessment of 1,3-dichloropropene (Telone II).

AEHLA. Albrecht, W.N. Washington, D.C. : Heldref Publications. Archives of environmental health. Sept/Oct 1987. v. 42 (5). p. 292-296. Includes references. (NAL Call No.: DNAL RC963.A1A7).

1136

Volatile emissions from Douglas-fir heartwood treated with Vapam or methylisothiocyanate.

FPJDA. Morrell, J.J. Lebow, S.T. Madison, Wis. : Forest Products Research Society. Fumigants, which play an important role in arresting and preventing decay of wood exposed to the weather, have recently been used to control decay in building timbers. The possibility exists that chemicals could migrate through the wood and be emitted inside buildings, thus posing a health hazard. Emission rates from blocks of Douglas-fir heartwood, treated with Vapam or methylisothiocyanate (MIT), were measured by placing the blocks in tanks under a stable air-flow and then analyzing air samples by gas chromatography at regular intervals. Three sulfur compounds were detected: carbon disulfide, carbonyl sulfide, and MIT. Emissions from wood treated with MIT were generally higher than those from Vapam-treated wood. Although our results indicated that emissions were detectable for at least 1 year after treatment, levels were extremely low and should not be a problem in storage buildings or in factories where air exchange is high. Fumigant treatment of wood used in tightly sealed buildings that are continually inhabited is not recommended. Forest products journal. Feb 1989. v. 39 (2). p. 41-44. Includes references. (NAL Call No.: DNAL 99.9 F7662J).



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